THE AMERICAN ARCHITECT AND BUILDING NEWS

ADVERTISERS' TRADE SUPPLEMENT.

No. 9. SATURDAY, JANUARY 6, 1883. Volume XIII. No. 367.

WARNER'S ADJUSTABLE DOOR-HANGERS.

ANYTHING which relates to the perfect working of sliding doors is of special interest to our readers, and therefore we take pleasure in presenting a somewhat extended description

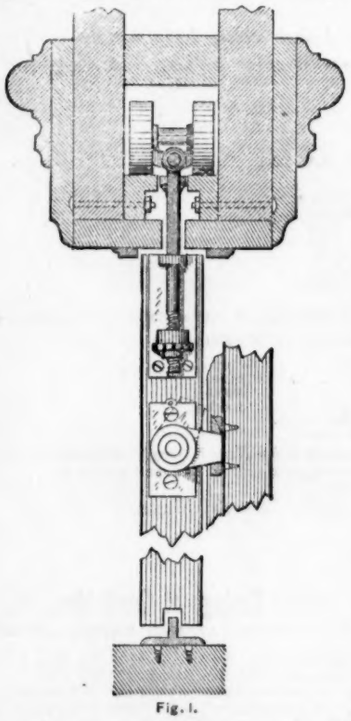

Fig. 1.

of a new adjustable door-hanger now being introduced by Messrs. E. C. Stearns & Co., of Syracuse, N. Y. A general view of the hanger is presented in Figure 2 of the engravings.

Figure 1 is a vertical section taken near the back of the door showing the back hanger as fitted, and the construction employed for the track. The front and back hangers are connected by a rod, shown broken in Figure 2, thus making the running gear substantial and adequate for the work it is to perform. The hangers are made of wrought and malleable iron, and in a measure overcome all the objections hitherto pertaining to the running of sliding doors. An important feature is the adjustability. The doors may be raised and lowered by means of the ratchet nuts on the rods of the hangers. One of these is clearly shown in Figure 1. By this means the door may be raised so as to clear the carpet, or to overcome any sagging or settling of the building after construction. A double track is employed, and by means of a universal joint in connecting the hanger, the carriage is made to conform at all times to the track, causing an equal bearing on both rails. The tracks are made of hard wood, bolted in position as shown in the engravings. The bearings of the hangers, being finished and lined with anti-friction metal, are noiseless and require no oiling. No track is required upon the floor, and carpets may be extended through the opening. Short guides are placed in the pockets into which the doors slide. A section of one of these is shown in Figure 1. A special feature of this apparatus is the gravity stop used upon the back edge of the door, and shown below the hanger in Figure 1. The object of this device is to prevent the doors running too far into the opening. By inserting a knife blade between the jamb and door the stop may be raised, allowing the door to be drawn into the opening for the purpose of adjusting or removing. A rubber bumper is provided for the stop to strike against, and is indicated by the dark shaded portion under the stop in Figure 1. The dotted lines show how the stop may be raised by the knife blade, as mentioned. In framing for the reception of these hangers, the general plan followed is indicated in Figures 1 and 2. A header, as shown, is inserted between the beams in order to keep the studding from spreading or contracting, and to maintain a uniform space between the tracks to prevent binding the small friction roll clearly shown in Figures 1. A pocket is provided in framing the track, into which the hangers are inserted when being attached to the door. A special casting accompanies the hangers for use in the construction of this pocket, but which is not shown in the engravings.

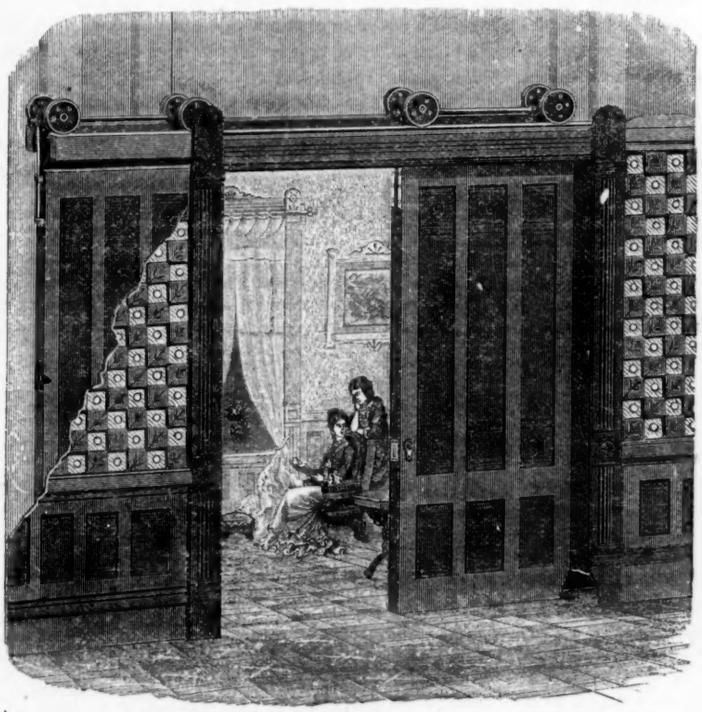

Fig. 2.

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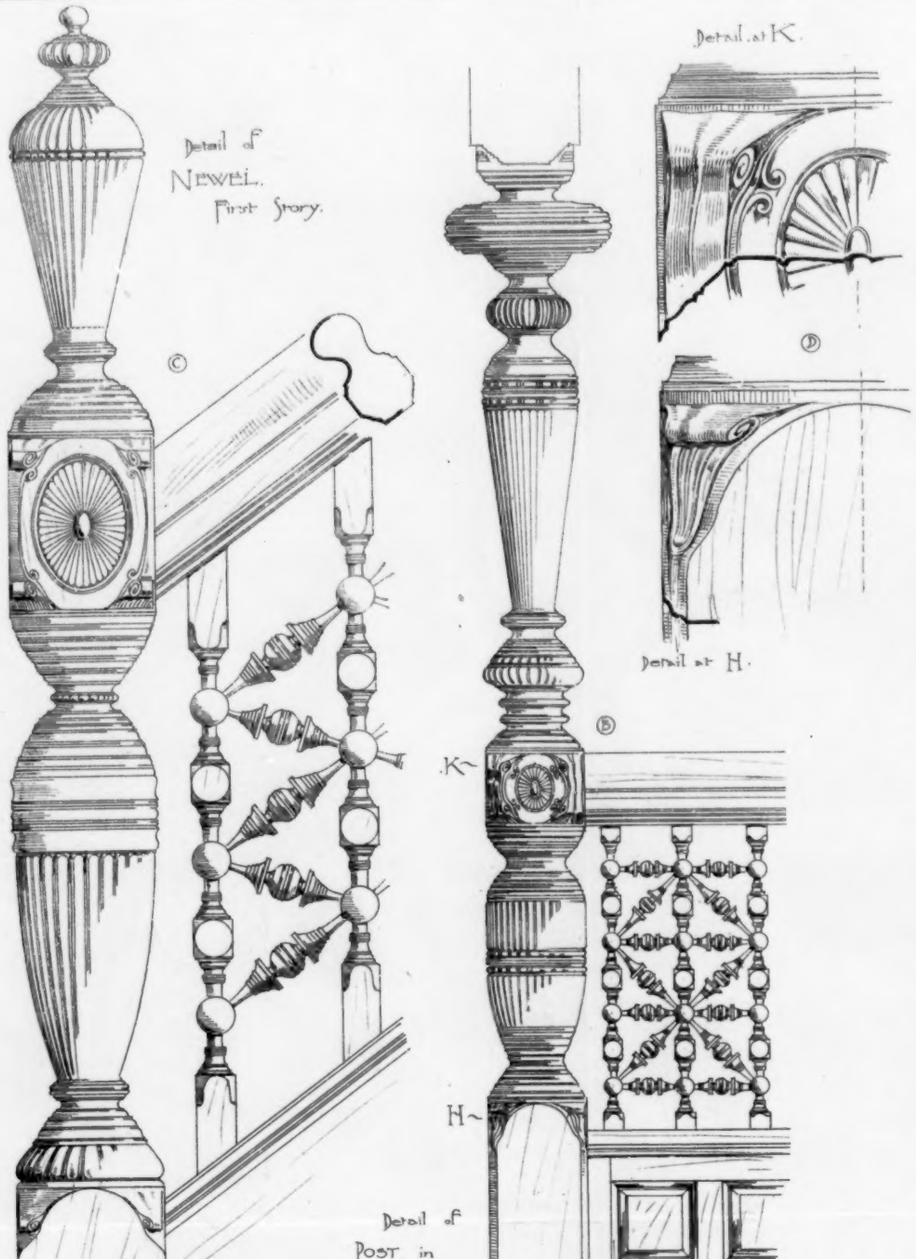

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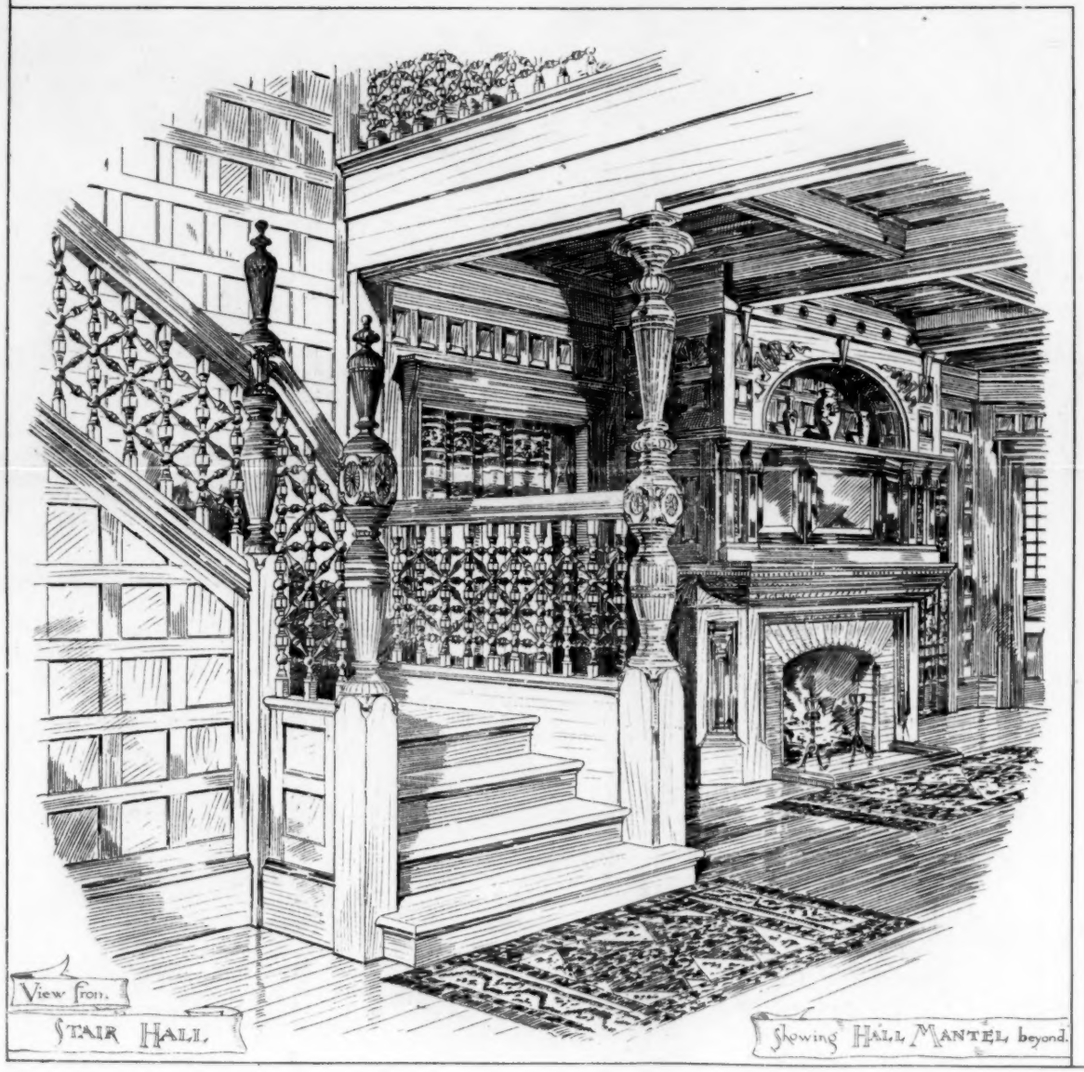
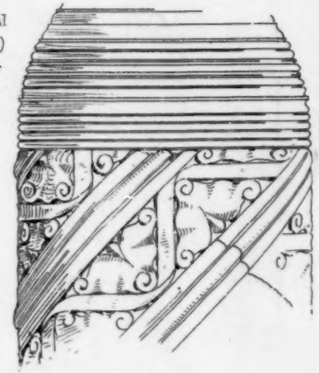
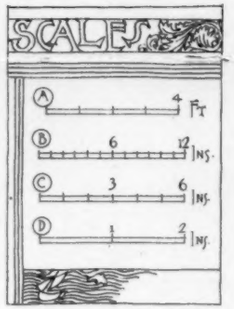


View from STAIR HALL showing HALL MANTEL beyond.

POST in STAIR HALL second Story.



Detail (at G) of Post



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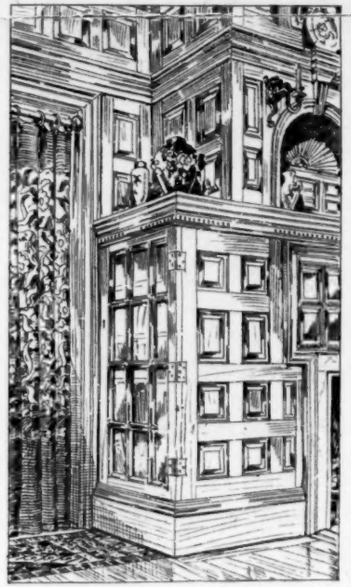

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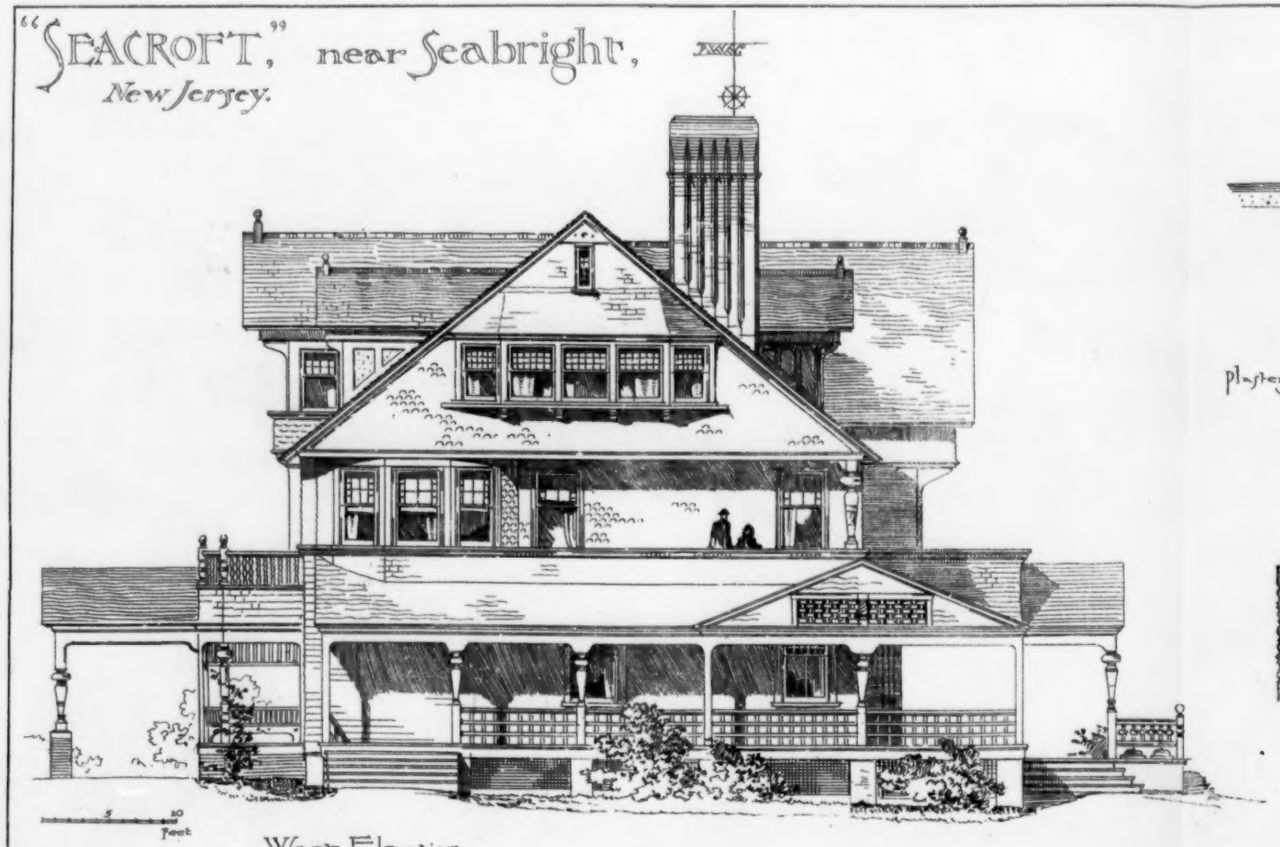

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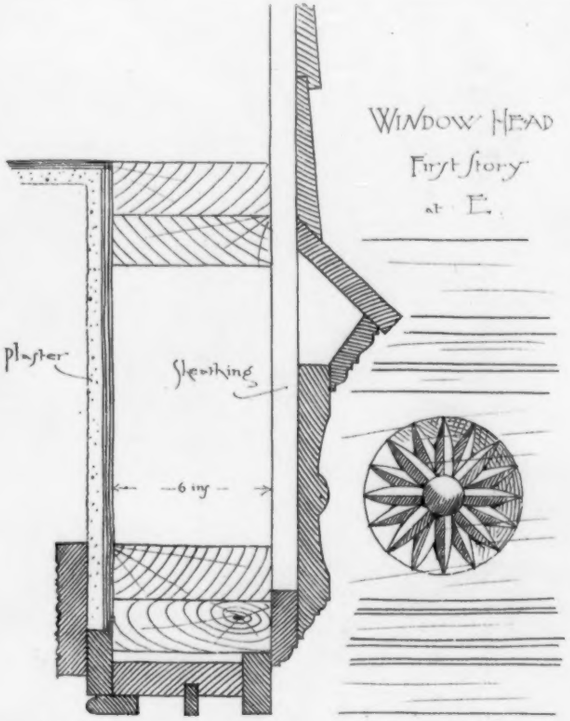

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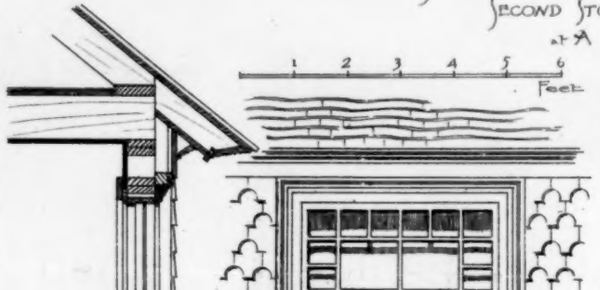
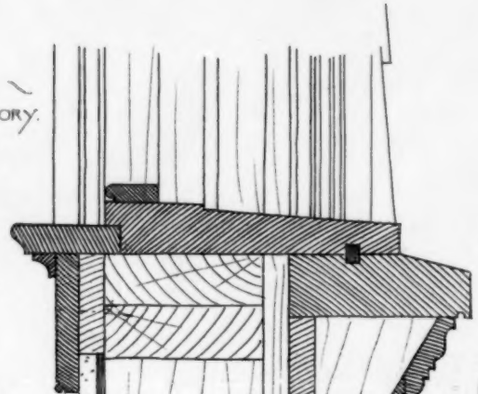


Section thro' Sill
Second Story.
at A



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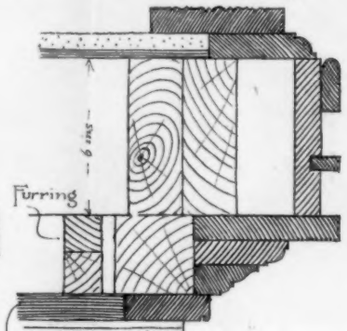
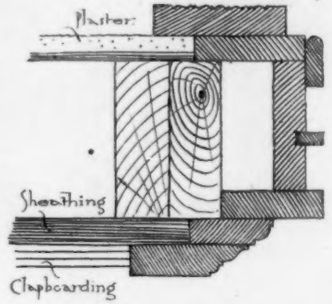
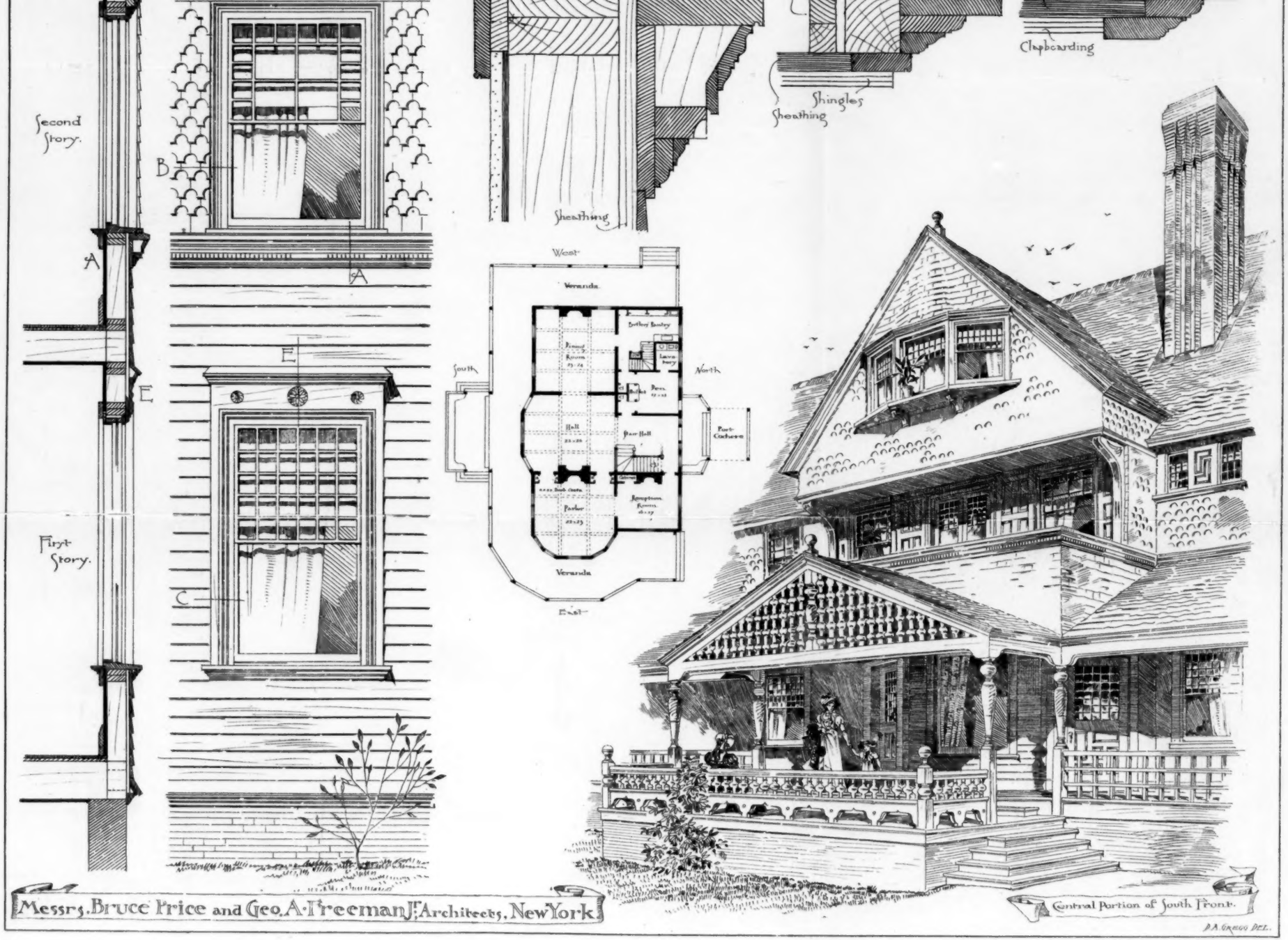


at C.—First Story





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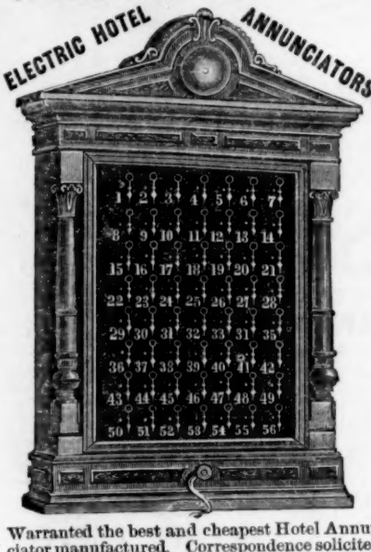

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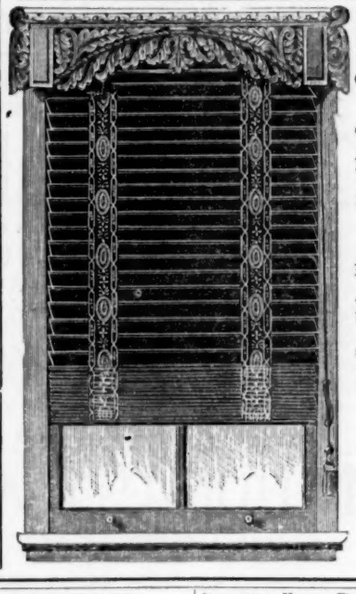

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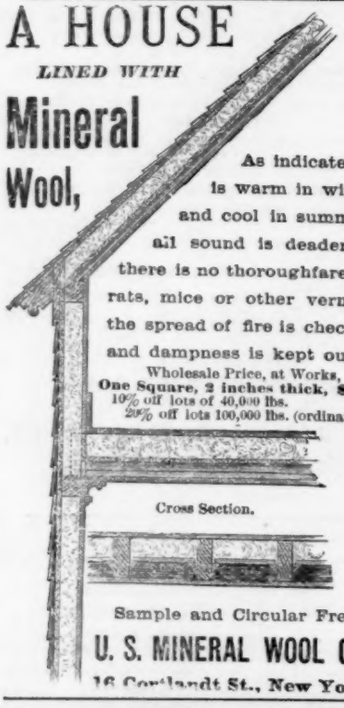

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As usual the close of the year has brought us into close communication with our subscribers, and we have taken note of all the complaints, suggestions and compliments that have reached us, and hope that the makers of them will be satisfied with such action as we may be able to take. The compliments are such as any reasonably well-conducted journal receives at this time of year, and the suggestions are of more or less practical value, while the complaints to a certain extent recoil on the makers. Until we became case-hardened through familiarity with the assertion, we used to be not a little chagrined at the bluntness with which even the most personally friendly of our subscribers told us that "we do not care for the reading-matter," "we never bind it up at the end of the year," "all we care for are the illustrations;" but at last we have come to understand that the journal consists of two distinct features, for one of which — the less valuable — the text, the editors are solely responsible; while for the other and more valuable, the illustrations, they are responsible in only a secondary degree. Therefore all complaints directed against this feature should be borne in part at least by those who are primarily responsible for their occasion — the contributing architects. If the illustrations we publish are not satisfactory to a given subscriber, it rests with him to offer us such as he would like to have appear in our pages; he has our cordial invitation to do so.

FOR the sake of the point we wish to make we will grant that the illustrations are all or the most important part of what our subscribers wish to secure in return for their subscription money, and that the complaints of the shortcomings of the journal in this respect are justifiable; and after looking over the illustrations we have published during the past year, we are obliged to confess that as an exposition of current American architecture it is wofully incomplete, the elements of dignity and lofty architectural achievement being minus quantities to an unwarrantable extent. The cause of this deficiency is not that dignity is not attained in this country, nor is it that our architects have less frequent occasion to practise their highest efforts than European architects: the opportunities and possibilities that the public and private wealth open to the profession are certainly as great here as elsewhere, and by hearsay and ocular evidence we know that there are men who are worthily acquitting themselves of the tasks imposed on them. But from our inability to obtain illustrations of these works we are unwillingly obliged to convey to our readers in all parts of the world the idea that our architects are mainly engaged in designing country-houses — pretty enough, and vastly superior to the average of the work we laid before our readers in the early days of the journal — but that our cities, with their costly dwellings, hotels, stores, apartment-houses and public buildings, Topsy-like, "growed." In short, the best work of a large number of the best men is, in spite of every effort — and we profess to have made constant effort to secure them — inaccessible to us. We do not doubt that our own illustrated pages are contrasted to our disfavor with those of the London journals. But consider how different are the circumstances. Big as it is, London and its multitude of architects are far more within the reach of editorial influence and persuasiveness; the men and their work are better known and more easily knowable; the meetings and the exhibitions of the Royal Academy, the Institute and the Association bring the editors into frequent personal contact with practising architects, and give them opportunities to see for themselves what the profession about them is engaged upon, and offer chances such as we have not to make selection for their illustrations. How is it possible for us in Boston to know what is doing in the offices of St. Louis, Chicago, Philadelphia, Baltimore, or even in New York? If any one delays his offering in the expectation that we can make a personal bodily visit of entreaty, he little knows the time-consuming nature of an editor's occupations.

To speak now of more specific things. We trust that our readers have found of interest and value the initial-cuts we have published during the past year, and if they have, that they will be willing to contribute a little more freely material of the necessary character. We do not ask for more than pencil tracings of note-book sketches, of bits of original design of suitable character, or of any interesting subject that may be encountered in turning over the leaves of architectural books or periodicals. For offerings of such material we shall be very grateful. In the early years of this journal, when our processes of reproduction had not reached their full development, and when our own drawing-room was a non-existent thing, we were forced to accept for publication only line-drawings in pen-and-ink of great preciseness of execution. Since that time our processes have been vastly improved, and we have succeeded in securing very satisfactory results from clear pencil-drawings, and once or twice from washed drawings in monochrome. Our facilities for re-drawing colored drawings or those whose artistic execution is inferior to their architectural merits, have also grown, and architects need no longer hesitate to offer drawings for publication because of failings in these particulars. If acceptable in other respects we shall be glad to publish them — in time. Moreover, we have now, or soon shall have, in operation a new reproductive process, which will enable us to reproduce in monochrome, more or less satisfactorily according to the actinic effect of the colors used on the original, washed drawings as they leave their authors' hands, and also to publish views from nature; and we should be pleased to receive from architects ordinary photographic negatives, of suitable size, of buildings erected from their designs, or of picturesque subjects and buildings of historic interest, although it is probable that we should find some negatives not suited to the process for various technical reasons difficult of specification.

A VERY serious discovery is said to have been made in respect to the recent explosions of steam-pipes in the streets of New York. According to the account which we find in the *World*, complaint was made a few days ago at the office of the American Steam-Heating and Power Company that steam had been shut off by some person unknown from certain buildings in Exchange Place at about eight o'clock the previous evening. The next day the complaint was repeated, and a man was deputed by the Company to watch the building. On the following evening the steam was again cut off, but as investigation failed to show any tampering with the local valves, the watchman hurried back to the main office, where he found the engineer wondering at the high pressure shown on the steam-gauge; and guided by this indication the man-hole just in front of the boiler-house was opened, and the large valve was found to be screwed down tight, shutting off the steam from about ten miles of street mains. The strength of the valves being less than that of the main supply-pipe behind it there would be some danger that the accumulated pressure might, unless the engineer at the central boiler were on his guard, burst through it, filling the pipes beyond with steam at a pressure of seventy pounds to the square inch, and with a certain explosive force, due to the suddenness of the movement, which they might not be able to resist, and under some circumstances a great deal of damage might be done. As it is hardly likely that such a valve would be closed except with malicious intent, information was given to the police in order that a thorough watch might be kept. According to the officers of the company,

there is reason to believe that the explosions at the corner of John and Nassau Streets, and at the junction of Liberty and Williams Streets, were caused by intentional tampering with the pipes. In the former case, the valve which gave way was found to have been loosened with a wrench, after the engineer in charge left it, just enough to give an opportunity for the steam to do the rest, and as the valve which failed in the same manner in Liberty Street was easily accessible from a man-hole, a similar operation may have been carried out there. Suspicion is said to attach to a former employé of the company, who is likely, if such charges are proved against him, to repent his cowardly mischievousness.

Owing to defects in the roof over the Assembly Chamber in the State Capitol at Albany serious infiltrations of water have taken place in the stone-work of the walls and vaulting, and the face of the wall forming the tympanum under one of the great arches, on which is painted one of Hunt's famous pictures, has begun to scale off in large patches. This is too common an experience with sandstone masonry which has been soaked with water from the top to be particularly worthy of comment, except for the fact that the exfoliation carries away with it the precious painting, in patches from a few inches to a foot in diameter. To prevent the total destruction of the picture, men have been employed night and day in drying the stone with hot irons, and Mr. John G. Carter, who was Mr. Hunt's assistant at the time when the paintings were executed, has been sent for to retouch and repair the places where the original work is hopelessly spoiled.

A determined attempt has been made in New York to prevent the obstruction of sidewalks by poles for the conveyance of electric wires. A few days ago some men from the United States Illuminating Company began to set poles along the south side of Fortieth Street, between Fifth and Sixth Avenues, and in the course of their operations placed one in the vaults under the sidewalk which belong to the Hotel Royal, at the corner of Sixth Avenue. The proprietor of the hotel, Mr. Meares, very naturally objecting to such an intrusion, sent a porter to cut the pole down. The foreman of the party from the Illuminating Company caused the porter's arrest, but Mr. Meares answering for his appearance to be tried for malicious mischief, he was released, and Mr. Meares then obtained a temporary injunction forbidding the erection of any poles in front of his premises. Meanwhile, Dr. Wylie, who lives on Fortieth Street, near by, finding that a pole was to be set up in front of his house, endeavored to restrain the workmen, but was driven off by one of them, who threatened to "lay him out" with an iron crowbar. He then invoked the aid of the law, and had the belligerent workman arrested, and word having been sent to the Police Commissioners, an order was issued putting a stop to all further operations. The next morning a number of the residents on Fortieth Street met to take concerted action in ascertaining and defending their rights in regard to the matter. It was found that the Illuminating Company had acted under authorization from the Commissioner, of Public Works, but that the authorization had been revoked as soon as the objections of the abuttors were known; but it appeared also that Fortieth Street, bordering as it does upon the south side of the Reservoir Park, was subject to the jurisdiction in such matters, not of the Commissioner of Public Works, but of the Park Commissioners, and these, being appealed to, issued a summary order to the Captain of the Park Police to arrest any one who should attempt to place poles in the street.

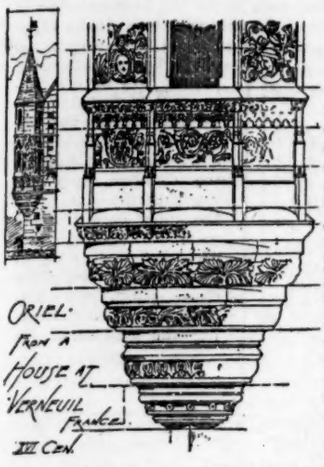
To fortify themselves still further, several of the property owners then obtained special injunctions restraining the Illuminating Company from erecting poles or stringing wires in the street, and accompanied by orders citing the company to appear and show cause why the injunction should not be made permanent. The reputation of the residents on West Fortieth Street for insisting upon their rights is already pretty good, and strengthened as they are by such an array of arguments they are hardly likely to be molested again. Meanwhile, the Illuminating Company must find another way of carrying its wires to their intended destination, or some person or persons must go without the electric light which they wish for. Of course, it is very desirable that all electric wires should be carried underground, but it is hardly less desirable that some way should be found for allowing them to be carried temporarily above the surface, until a better mode is invented. At present, the unreflecting prejudices of a few persons, who refuse to allow wires to be placed either in front of or above their houses, may, and in some cases does, deprive their neighbors of the use of the telephone exchange systems, quite as much to their disadvantage as to that of the telephone company, and without any real benefit to anybody, and although electric-light wires can be carried beneath the surface where telephone lines cannot, the practicability of burying wires conveying a current of high intensity is by no means settled.

Another chimney accident is reported from England, a shaft at Bradford having fallen upon a building full of operatives, completely demolishing it, and killing and wounding about ninety persons, nearly all of whom were women and children. As the boiler flues of eight mills were connected with the shaft, its destruction puts a stop to their operations, and about three thousand persons are thus thrown out of employment. The cause of the catastrophe appears not to be known. In the last serious case of the kind, the failure of the masonry, which seemed to have been executed with the greatest care, was, we believe, finally attributed to the swelling of the Portland cement in which the bricks were laid, but this theory never seemed to explain the circumstances satisfactorily, and it is at least to be hoped that a new light may be thrown upon the subject by the investigation which is certain to be made into the present disaster, which may enable engineers and builders to avoid the possibility of similar ones in future.

Colonel Thomas L. Casey, the engineer in charge of the construction of the Washington Monument, has submitted to Congress his annual report, which shows that great progress has been made during the year, ninety feet of masonry having been added to the shaft, which is now three hundred and forty feet above the base. If provision can be made for procuring stone as rapidly in the future as during the past season, Colonel Casey believes that the shaft can be entirely completed before the close of the season of 1884, and possibly early in the summer of that year. Although one hundred and seventy-one feet yet remain to be added before the obelisk attains its full height, the construction of the upper portion is very much lighter than the rest, and it is estimated that ninety-two one-hundredths of the total weight has already been placed upon the foundation. The cost of completion, exclusive of the terracing or other ornamentation around the base, will be about two hundred and fifty thousand dollars, and there can be no doubt that the necessary appropriation will be readily made, if for nothing else, at least for the sake of securing to the present Government the honor of having finished the highest structure in the world.

The picture of Raphael called the Madonna dei Candelabri, which has been lent for a short time to the Metropolitan Museum in New York, is to be exhibited with all the precautions which so valuable an object demands. A fire-proof room has been built expressly for it, and the wall on which it is to hang has been fitted with the rolling iron shutters used for protecting the windows of stores, so that at night the shutters can be drawn and the painting securely screened from mischievous hands. An effort is likely to be made to secure subscriptions for purchasing the picture, and it is much to be hoped that, if made, it will be successful. There is no lack of money in New York for such purposes, but it must be confessed that the qualities of Raphael's pictures are not such as to appeal much to the taste of ordinary visitors to the Museum. Of course this does not prove that the taste of the average citizen of New York is bad, but such pictures as he has been accustomed to see and admire — the Schreyers, Bouguereus, Jacquets, and Géromes, to say nothing of "impressions" and "harmonies," — leave the mind quite unprepared to find much pleasure in the sweet peace of the best Italian painting. If we ventured to make any suggestion on such a subject, it would be that the trustees of the Museum should beg the loan of Mr. Aspinwall's pictures to hang by the side of their Raphael. With these, and perhaps some of the Jarves pictures from New Haven, a room might be filled with paintings, the influence of which upon the minds of visitors would be very different from that produced by the collections generally seen among us, and we imagine that few persons who cared at all for pictures and were familiar only with New York galleries, would leave such a room without feeling that their ideas had undergone a change.

BUILDING SUPERINTENDENCE.—XXV.



WE are now ready to put the drawings into definite shape.

Beginning with the proscenium-arch, whose form we wish first to determine, we consider what requirements of width and height it is necessary to conform to, and reflect that as the hall will often be used for balls, fairs and other entertainments which will fill it to its utmost capacity, it is desirable to make the proscenium opening as wide as possible, in order that the stage may not be too much separated on such occasions from the auditorium. Allowing only a small projection on the inside of the tower wall, with an abutting wall on the other side of the arch of the same width, we shall have an opening of 44 feet in width, which is ample for our purpose. The height, however, is restricted by the consideration that the height of ordinary theatrical scenery is limited, and it is desirable to avoid the necessity for wide "sky borders" to fill the space between the top of the scenes and the soffit of the arch; while it is also of importance in checking the spread of fire from the upper portion of the stage to the auditorium not to make the proscenium opening unnecessarily high. A glance is sufficient to show us that the arch, loaded as it is most heavily at the crown, must have considerable rise, unless it is made of segmental form, which would involve a thrust beyond the power of the limited abutments to support with safety. We will for the first trial give the arch an elliptical shape, making the rise 14½ feet, with 44 feet span, and taking the depth of the arch-stones at 3 feet. Laying out the arch and the wall above it in elevation at a large scale we have the elements necessary for determining approximately its stability. A diagram of one-half the arch is sufficient, as it is symmetrically shaped and loaded, so that the line of pressure will be the same on each side of the centre.

This line will show us the direction of all the forces which act upon the arch and its abutments, and if it fulfils two essential conditions the arch and its abutments will be stable; if not they will be dangerously weak or fail altogether.

These requirements are:—

1. The curve of pressures in the arch must lie wholly within the middle third of the voussoirs.

2. The line of pressure prolonged through the abutment must strike well within the base of the abutment.

The reasons for these will be readily seen. If the line of pressure passes through the central line of the voussoirs, the crushing strain due to it will be equally distributed over the surface of each joint, but any deviation from a central position gives an inequality in the distribution of the strain which increases very rapidly with the variation of the pressure-curve from the central line. So long as the curve remains within the middle third of the depth of the voussoirs, the strain upon each joint is one of compression only, although it may be unequally distributed; but when it reaches the limit of the middle third, the crushing strain at the nearest edge of the joint is twice as great as when equally distributed, while that on the more remote edge is reduced to zero; and beyond this, while the compression of the nearer edge is increased to a hazardous extent, the strain on the other edge passes into one of tension, which, if there should be any opportunity for movement, will open the joints and bend and dislocate the arch until it falls. This is a fatal defect, and the boundaries of the middle third of the voussoir, beyond which the pressure line cannot pass without producing a tensile strain either at the extrados or intrados, must be strictly regarded.

The second requirement, that the resultant of all the forces acting upon the abutment must strike within its base, is obviously a necessary one, for otherwise the effect of the combined pressures would be to overturn the abutment, as often occurs with arches carelessly designed. If the abutment were a solid and unyielding mass, it would be stable if the pressure curve fell anywhere within the base, even at the extreme edge; but in practice the resistance is always given by masonry of some kind made up of small blocks, united by mortar or cement which may be compressed in a greater or less degree; and the effect of a pressure applied too near the edge of such a mass is to crush or distort it, and finally to disintegrate it, so that the usual rule is to require that the pressure curve in an abutment of stone or brick work, standing on a horizontal base, shall strike the base at a point not nearer to the outside face of the abutment than half the distance between this outside face and the point where a vertical line passing through the centre of gravity of the abutment would intersect the base.

To determine the line of pressure for our arch we will take the following method, which is sufficiently accurate, and is applicable to arches of any form, and loaded in any manner.

Figure 178 shows one-half of the arch and the wall above it in elevation, to scale. We begin by dividing the arch and its load into slices by vertical lines. The slices may be of any width, but it saves trouble in computation for a large arch to make them each 2 feet wide as far as possible from the centre line. If the span of arch is not a multiple of 2 feet, the width of the last slice but one will be a fraction of 2 feet. The inner edge of the last slice, touch the marked *X*, must just and the outer edge must touch the extrados of the first voussoir. In

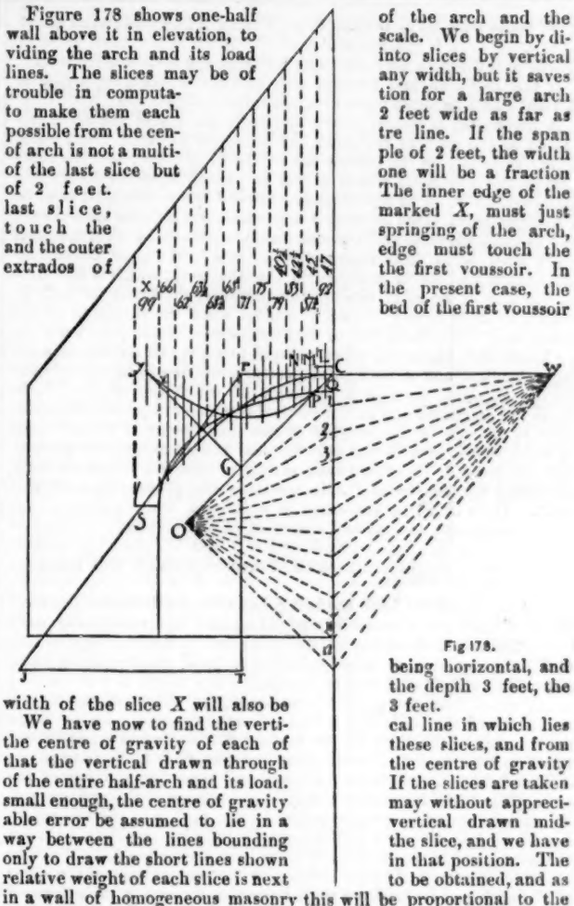


Fig 178.

the present case, the bed of the first voussoir being horizontal, and the depth 3 feet, the width of the slice *X* will also be 3 feet.

We have now to find the vertical line in which lies the centre of gravity of each of these slices, and from that the vertical drawn through the centre of gravity of the entire half-arch and its load. If the slices are taken small enough, the centre of gravity may without appreciable error be assumed to lie in a vertical drawn midway between the lines bounding the slice, and we have only to draw the short lines shown in that position. The relative weight of each slice is next to be obtained, and as in a wall of homogeneous masonry this will be proportional to the areas of the slices, we need only calculate these, leaving the thickness of the wall and the weight per cubic foot as constant factors, to be supplied in case we wish to determine any actual pressure from the relative ones which the diagram will give.

Measuring with the scale the length of the two vertical sides of each slice, dividing their sum by two and multiplying by the width, will give their areas in square feet, which we mark as shown.

We have next, for the sake of simplifying our work, to make two assumptions, which experience shows to be justified, although they have no theoretical foundation. One of these is that the pressure curve passes through a given point at the crown of the arch; and the other, that it also passes through a given point at the springing. If these two points are fixed, the rest of the corresponding curve is easily found, and for ordinary purposes we can safely suppose them to be so by the adhesion of the mortar and general inertia of the masonry. For a semi-circular or semi-elliptical arch, which naturally tends to rise at the haunches and descend at the crown, it is usual to make these points coincide with the outer limit of the middle third of the voussoir at the crown and springing, as at *C* and *S* in the figure. For pointed and segmental arches, which under ordinary circumstances tend to rise at the crown and descend at the haunches, the points fixed should coincide with the *inner* limit of the middle third of these voussoirs. If, however, a pointed or segmental arch is most heavily loaded over the crown, so that its natural disposition to rise at that place is counteracted, the fixed point may be at the outer third, either at the crown alone, or both at crown and springing, as may seem best suited to the circumstances.

In the case of our elliptical arch, the points *C* and *S* being the ones assumed to be fixed, we will prolong the centre line of the arch and load indefinitely downward, and then space off upon it in succession the weights of the slices of the arch and its load, or rather, of the areas which stand as the abbreviated form of those weights. Any scale may be taken, as these dimensions have nothing to do with those of the arch itself. At the scale we adopt, 92, the number representing the area of the first slice, will extend from *C* to 1; 87½, the second slice, from 1 to 2; and so on, 11–12 representing the last slice.

Next, take a point *O*, at any distance to the left of the line *C*–12, and opposite its middle point; draw *O C*, *O* 1, *O* 2, and so on, to *O* 12; the simplest way of doing this being to draw *C O* and 12 *O* at 45° with the vertical, which will give *O* at their intersection.

Draw now, from the intersection of *C O* with the centre line of the first slice, another short line, *P Q*, parallel to *O* 1, until it intersects the centre line of the second slice; then from this point, parallel with *O* 2, to the centre of the third slice, and so on, the last line,

X Y, being parallel to *O* 11. From *Y* draw a line downward parallel to *O* 12, until it intersects *C O* at *G*. A vertical drawn through *G* will pass through the centre of gravity of the arch and its load.

If the half-arch and its load were in a single piece, supported at *S*, they would be acted upon by three forces, namely: —

A horizontal pressure, proceeding from the key of the arch, and caused by the push of the other half-arch; the force of gravitation, acting vertically on the line of the centre of gravity; and the reaction of the abutment, which serves to oppose the other forces and maintain the whole in equilibrium. These three forces must meet at a common point, since otherwise they would not balance each other; and as the horizontal and vertical forces are fixed in direction, this point must be at their intersection, or at *F*. We have already assumed that the line of pressure in the abutment, which is the same as the line of reaction against the pressure, shall pass through *S;* hence, as *F* is already found, *F S* must show the direction of the thrust at *S*. We have yet to find the amount of the pressure; but we know that, like every other oblique force, it can be decomposed into a vertical and a horizontal pressure, which will be represented by the adjacent sides of a rectangle of which the original force forms the diagonal; and as the vertical component is obviously equivalent to the sum of the weights of the small slices of the arch and its load, which furnish the only vertical pressures, and are already laid out from *C* to 12, we have simply to take *F T*, equal to *C* 12, and draw the horizontal *T J*, intersecting the prolongation of *F S* at *J*. Then *J F*, at the scale to which the other pressures are drawn, shows the amount and direction of the oblique reaction acting through *S*, and applied at *F*, and *F T* and *T J* show the amount of the vertical weight and horizontal thrust by which it is balanced at that point.

The arch and its load not being, however, a solid mass, but composed of small parts, mutually wedged against and supporting each other, the actual direction of the pressures is not the broken line *C F S*, but a curve, or rather a curved series of short straight lines, coinciding with *C F S* only at the extremities *C* and *S*, and varying in direction with the gradually accumulating weight of the successive slices of the arch and its load from the centre. To facilitate the drawing of the diagram, we prolong *F C* horizontally, and draw 12 *W* parallel to *J F*. As *C* 12 is equal to *F T*, *C W* is equal to *J T*, and, like it, represents the horizontal thrust at the key of the arch, while 12 *W* represents the oblique pressure at the springing *S*. The pressures at successive points in the arch will then be represented, both in direction and amount, by lines intermediate between these two, and if we draw to *W* lines from the points 1, 2, 3, and so on, which correspond to the weights on the central lines of the slices of the arch and its load, we shall have the successive directions of the curve of pressures at its intersection with those lines. Nothing then remains but to draw *C L* horizontally, *L M* parallel to 1 *W*, *M N* parallel to 2 *W* and so on to *S*, where the line will coincide with that previously found.

By referring to the diagram, it will be seen that the compressive strain upon the arch-stones grows continually greater from the crown to the springing, the horizontal component remaining always the same, while the vertical component increases.

Having found the line of pressures, it remains to see whether it is contained in the middle third of the voussoirs. A glance shows us that this is not the case, and the arch is impracticable.

If it were built it would bend outward at *R*, and sink at the crown; the inner edge of the voussoirs would crush at the points where they are crossed by the pressure curve, and the whole would fall.

There is nothing for it but to design a new arch, and as the curve of pressures varies with every form of arch, a new curve must be constructed for each. After trying an ellipse of greater rise, and then a circle, all in vain, we are led to the pointed arch, as being the only one adapted for a large span, with the maximum load on the crown, and by laying out such a curve, as shown in Figure 179, we succeed in passing the curve entirely through the middle third of the voussoirs, taking these at 3 feet long.

We have now three more points to determine: 1. Whether the abutment is sufficient to resist the thrust of the arch safely. 2. Whether the pressure upon any arch-stone will be so great as to risk crushing it; and 3. Whether the inclination at which the pressure is applied upon any voussoir, or any course of masonry in the abutment, is so great that the superincumbent mass will be in danger of sliding on it, instead of simply pressing against it. As we have seen, the direction of the thrust of the arch at its springing is shown by the line *F S*, and if the arch and its load were required to be held in equilibrium by an inclined column, for instance, the line *J S* would show the position of the axis of the column. We have here, however, to resist the thrust, not a rigid support, but a mass of considerable weight, which will add a vertical pressure due to this weight, to the inclined thrust, modifying its direction as well as its amount, and we must find the modified direction of the pressure before we can determine whether it will fall upon the base of the abutment so far within its outer face as we have found to be required for perfect safety.

Strictly, the modified line of thrust through the abutment would be a curve, since the vertical component accumulates as we follow the pressure line away from the springing of the arch; but for our present purpose we need only ascertain the point and direction of its application at the base of the abutment. To do this, it is sufficient, instead of dividing the abutment into successive portions and calculating the modification in the thrust due to the weight of the arch, to regard the whole abutment as a single mass whose weight will give the vertical component which we need to fix the final direction of the thrust. Neglecting the slice of the abutment between its inner face and a vertical line dropped from the extrados of the arch at the springing, since the weight of this does not affect the thrust, the remaining portion will have a trapezoidal shape, and we proceed to find the position of its centre of gravity by drawing the two diagonals of the trapezoid, and finding the middle point *B* of one diagonal, and setting off at *A* on the other diagonal the distance from the lower corner of the trapezoid to the distance from the upper corner of the trapezoid to the point of intersection of the two diagonals; then connecting *B* with *A* and dividing *B A* into three equal parts, the first

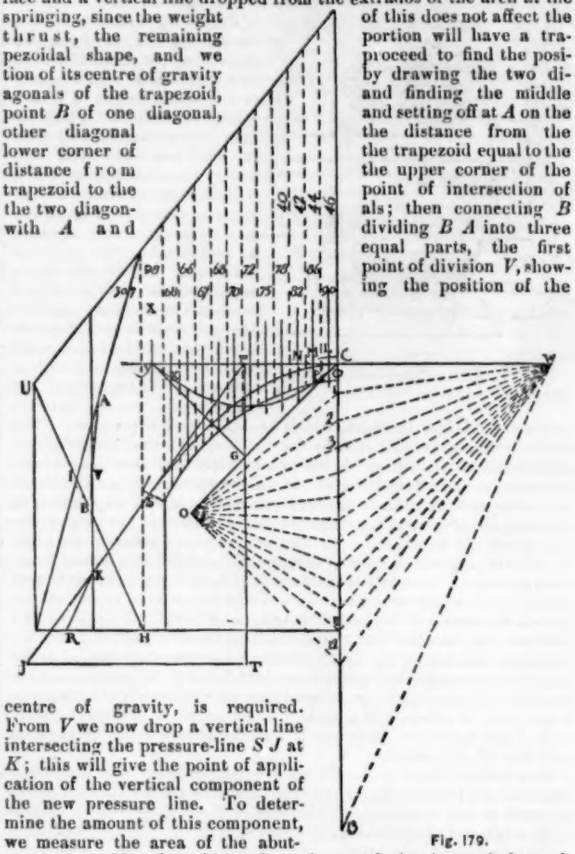


Fig. 179.

point of division *V*, showing the position of the centre of gravity, is required. From *V* we now drop a vertical line intersecting the pressure-line *S J* at *K*; this will give the point of application of the vertical component of the new pressure line. To determine the amount of this component, we measure the area of the abutment trapezoid as has already been done with the slices of the arch and its load, and obtain 507 as the result. We lay this off from 12 to 13, on the same vertical line that measures the vertical pressures of the slices of the arch and its load, and at the same scale, and then draw 13 *W*, which gives the direction and amount of the total combined pressures of the arch, load, and abutment. Transferring the direction of the final pressure so as to intersect *K*, the actual point of application, we find that it will strike the base of the abutment at *R*, which is nearer the vertical dropped from the centre of gravity of the abutment than half the distance between this vertical and the exterior face of the abutment, and the abutment may therefore be relied upon as stable under the given pressure.

We must now test the second point of safety in our arch, and ascertain whether the pressure at any given joint is greater than the stone can be relied upon to resist. The greatest pressure, as we see at once from the diagram, is at the springing line. Scaling the line 12 *W*, which represents this pressure, we find it to measure 1140, at the scale of this part of the diagram. This, however, being expressed in terms of superficial feet, must be multiplied, to find the pressure which it represents, by the number of pounds which a portion of the wall one superficial foot in area will weigh. The wall is 16 inches thick, and at 112 pounds per cubic foot the weight required will be 149 pounds. The total stress at the springing will be therefore $149 \times 1140 = 22350$ pounds. The area of the joint is $36 \times 16 = 576$ square inches, and the pressure will therefore average $22350 \div 576 = 38.8$ pounds, which is far within the limit of safety.

The determination of the third point, whether the direction of the pressure at any joint is such as to cause sliding, can be only approximately made, since the adhesion of the mortar, the roughness of the stone, and many other elements, will enter into the actual result, but we may safely assume that no pressure will cause sliding of the stone voussoirs which is not applied at a greater angle than 32° with a normal to the direction of the joint. Our pressure curve shows that the angles of application of the stress are all well within this limit, and we need feel no uneasiness in regard to the voussoirs. With respect to the joints of the abutment, however, we may feel some anxiety, as the direction of the pressure for the courses nearest to the springing of the arch forms an angle of somewhat more than 30° with the vertical; but the adhesion of the mortar to brickwork is far greater than to stone, and the true angle of safety is correspondingly increased, so that if we take the precaution of delaying the removal of the centering on which the arch is built until the mortar in the abutment is well set, we need have no apprehension as to the result.

BUILDERS' SCAFFOLDING.—VII.

STAGING is a species of scaffolding; in fact in some parts of the United States the words are used as interchangeable terms, but the former more particularly applies to a stage, platform, or floor, which is erected at once to its specific altitude. Thus a staging is an elevated, temporary, floored space for operating a derrick, or for temporary tramways in connection therewith, or for the purpose of erecting large roof or bridge trusses or girders, or for the purpose of accommodating the ceremonials connected with laying corner-stones, or for the inauguration of monumental structures, etc. Although staging is a more general accompaniment of works of civil engineering, as in the erection of breakwaters, piers, viaducts, etc., nevertheless, in connection with architectural building it is also an accompaniment of importance in certain structural erections, such as the erection of city or suburban ornamental bridges, or roof-trusses of buildings of large span in their permanent place. It either extends over the entire area to be roofed or bridged, or is of sufficient width for working accommodation immediately under the position of each truss or girder, if these are far apart; or else it is constructed under the position of the *first* truss, and is of sufficient extent to serve the purpose of putting together the parts of all the trusses, one after another, after which they are slid along on the wall-plates to their respective positions by means of planks and rollers, or upon double-roller trucks. The *last* truss in permanent numerical order would thus have to be the *first* truss constructed and moved to its position, and the others would follow in reverse numerical succession back to the first, which would be the final truss erected. If there is no compensatory advantage in thus erecting a partial stage at one end of the building in preference to the middle of it, the latter position would only require the completed trusses to be moved the least distance towards either end after being put together. Movable staging is occasionally resorted to where a comparatively long and narrow building is to be roofed; it is furnished with wheels, flanged or otherwise specially adapted to work over a light railway track, or rails of hard-wood which are laid on the floor or joists along the entire length of the building.

For large skating-rinks, exhibition-buildings, railway-depots, swimming-baths, and such like special cases in which arch trusses and specially adapted forms are sometimes erected, very complete and special staging must be provided.

In building upon a beach or shore unusual and special conditions have to be encountered, and in each case the extent and nature of the exposures to the elements must be thoroughly investigated, and ample acquaintance with all the variety of maximum mechanical effects and conditions fully comprehended and appreciated, particularly in regard to the best means of obtaining permanent foundations and substructures, which shall safely withstand the fury of the elements in their greatest intensity.

When solid rock would seem necessary, but is seldom readily attainable in the precise position desired, it becomes necessary to resort to masonry piers, piles or trestle-work, or like devices in order to obtain the necessary foundation upon which to erect the superstructure, and notwithstanding that many of such buildings are only for summer use, permanence is essential and economy desirable; and hence, instead of resorting to masonry substructures which would necessitate the sinking of expensive caissons and costly stone or cement-concrete construction, iron screw-piles or cylinders are driven into the beach. Sometimes a landing-pier for vessels forms a prolongation of the staging with all needful approaches from the land. Attached to the heads of the sunk piles are iron columns in suitable

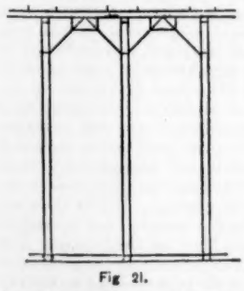


Fig 21.

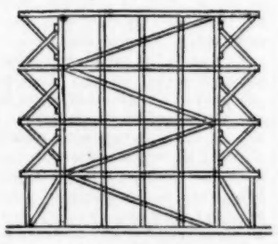


Fig 22.

lengths for being readily handled by such constructive appliances as are to be employed. These columns reach to a uniform level above tide-water, and are all latticed together with a system of tension-bracing in five cubic or normal planes, each intermediate column being tied and braced in eight alternate or opposite directions in each horizontal plane, repeated at convenient intervals in height. Four directions are alternate in lateral planes, four more in transverse planes, and eight more in the diagonal planes of the cubic bay. These being the only directions in which a square system of planting the columns, *i. e.*, in lateral and transverse directions square to each other, admits of, and as it affords eight different horizontal directions of braced resistance for each intermediate column of a skeleton structure, it suffices for our purpose of illustration to confine our observations to this system. When the piles, prolonged by vertical columns or standards, are brought to a uniform level at the proper height and braced as indicated, a frame of girders and transoms of iron or timber to carry the floor-joists is laid upon them, the floor system being further secured against side-strains by lateral bracing. Thus far the permanent structure above alluded to will coincide in general principles of arrangement with similar temporary structures for short-lived purposes under similar conditions of exposure, the methods and manner of construction, and the kind and quality of materials employed being regulated in each instance by the permanent or temporary character of the proposed structure. The regulation of any simple geometrical arrangement of plan of piles or columns of the permanent structure must depend upon the general requirements of the structure. There will occasionally also be an auxiliary system of direct supports necessary for incidental features which cannot be brought directly over the individual columns of any general system, and hence, special care is necessary to provide at the outset in the staging for the admission of such incidental columns and their bracings, without any interference with any parts of the staging. The same care, of course, will be required when devising the staging to avoid its interference with the general system of columns and bracings, as a large building (which, in such circumstances would probably be of wood, or of wood and iron in combination) mounted upon legs above storm-water reach exposes so extensive a surface to the force of high winds, that not only great breadth of base and secure interbracing of the columns, but also ground anchoring may have to be resorted to, to prevent lifting, oscillation, or overturning. The method of anchoring will depend on the nature of the facilities available.

In order to erect such a permanent structure as here indicated, a temporary staging becomes necessary. In the hurry of the moment we neglected to prepare a special illustration when the collection of engravings for this series was being executed; we shall therefore use Figure 21, which shows a temporary staging formed of heavy timbers, which is of a type that has been erected over deep water to carry a tramway used to deposit materials for the construction of a breakwater; but it may be noted that for our purpose the trussing of the girders would probably be omitted, and the character of the structure generally would be less complete in its appointments, and more flimsy in some respects, although, perhaps, a show of more extensive bracing, reaching to the bottom, might have been attempted to take the place of the anchoring below referred to, as it will be observed that the columns in the figure are only braced at the top with tension-rods fixed to the transom at mid-span, but in this case shore anchorage had been resorted to to resist side-strains. It also shows the transverse timbers or girders stiffened with queen-post trussing, evidently not to carry the tramways, as they are supported directly by the standards, but apparently to resist the deflecting strain which the downward action of the raking rod-bracing (which is intended to preserve from distortion the angular relation of the vertical with the horizontal timbers) would produce, when the structure was acted on by wind strains, and as this bracing only acts as a tie having no corresponding sectional area to enable it to resist compressive strain, therefore, it cannot act as a *strut*. There is no stiffening or trussing needed against an upward thrust which would be occasioned by the action of a strut, but which in any event would have been counteracted by the adjacent tie-brace, so long as its resistance held good.

Economy in bracing may be effected, when the standards are of timbers, by only bracing the middle third, fourth, or other appropriate fraction of the height, with one or more panels in height, as may best correspond with the intervals between the standards.

It may be noted that in setting screw-piles or other standards in such circumstances pontoons are specially useful in securing exactness of position of the piles, when these must be set in water, especially when the pontoon is constructed with four legs and guide-piles, which reach down to the bottom, and on which it partially rests, it being also partly supported by the water. Sometimes when foundations are difficult of access, it is more economical to have the standards disposed in clusters of a convenient number and arrangement at intervals, each cluster forming an independent pier, trestle or *bent*, which is independently braced. They are all connected together across the top by girders or trusses, and a flooring system, and when very high are further secured longitudinally by horizontal rails at intermediate heights and diagonal bracing.

Figure 22 shows a form of staging in transverse view, in order the better to exhibit in elevation the flying wind-braces, to which we have before incidentally alluded. It purports to be a specimen of staging used in the erection of large structures where considerable breadth has to be covered and large weights sustained temporarily at high elevations, such as wide truss-bridges, viaducts, etc., while putting the parts together in their proper position on the abutments and piers, until they are joined, bolted, and riveted together in a complete self-sustaining structure. In such a case the staging is commonly called *false works*. It consists as in the framed scaffolding of

square timbers, standards footed on sills, all brought up to a level, across the tops of which horizontal transverse timbers are laid, fastened with dog-irons. These horizontal timbers extend 8 to 12 feet or more beyond the outside standards (depending on the height of the standards between cross-transoms), its extremity being supported by a standard. Raking braces foot down upon the sills, and wedge up close under the transverse timber, there being one bay of cross diagonal bracing between the sill and transverse timbers, laid across the standards and bolted to each, where in contact with them. This assemblage of timbers as shown is repeated in each of the three stories above, with the exception that the diagonal bracing is only *alternate* instead of being *cross* in each story, also that the outer extremity of the transverse timbers is supported by a raking strut, instead of a vertical standard, and it buts against cleats bolted to the standards. Sometimes the strut is in two pieces, one of the pair being on each side of the brace, and all bolted together at the intersection. Sometimes the strut and brace instead of thus intersecting about mid-length, meet and abut against each other at mid-distance on the standard. This becomes necessary when the cross-transoms are a great height apart, making the bracing angle too sharp to be effectual with a convenient projection of transverse timber, for even if a sufficient projection is attainable, heavy timbers would be necessary for the bracing and strutting. When the brace and strut meet centrally in the height of the standard, between transoms, there is a counter-bracing added to oppose the strain induced by the foot of the brace, as described in the framed scaffold.

It will be well to observe the distinctive objects for which such bracing and strutting may be employed: thus, (1) to resist wind or lateral strains, encountered by the structure, and also by the superstructure of whatever nature or extent; and (2) bracing, of a similar form, intended to stiffen the standards against bending under a superincumbent load. The precise mechanical effects differ, as likewise do the scientific methods of investigating the strains produced under each condition also differ. This part of our subject will be taken up later.

The flying wind-brace, we may assume, is intended to reinforce, in a sense, the panel or bay bracing, which here serves to connect together the two outside sets of flying wind-braces, from story to story, and at the same time prevents lateral bodily movement of the entire structure as if in one compact mass, and to stiffen the outside tier of standards against the strong leverage of elevated side or wind strains by means of shorter timbers, and consequently is of smaller scantling and less horizontal spread (sufficient horizontal spread being in many cases inadmissible for high-reaching braces) than if either of the upper stories were braced directly up from the ground. The flying wind-brace, as in the above figure, it will be observed, is equivalent in form to the original cross-bracing, minus the outside standard. Cross-bracing of this kind was described in connection with the Scotch *Gabbert* scaffolding. When the force is acting sideways in any particular direction on the outside tier of standards alone, as that of the wind on an independent superstructure, as from the right towards the left side, the bracing and struts are in compression on the left side, so long as the standards and transoms remain normally perpendicular to each other; but so soon as distortion is induced, and the angular relation of the vertical and horizontal members begins to decrease on the one side and consequently to increase on the alternate side, the *strut* will be in tension under the above action, and the reverse conditions would take place on the right side, the transverse timbers and the bay alternate bracing conveying the strains from the wind-brace on the one side to the other. The alternate braces should be of sufficient scantling to resist compression as well as tension-strains between fixed points.

THE ILLUSTRATIONS.

"SEACROFT," THE HOUSE OF GEORGE S. SCOTT, ESQ., SEABRIGHT, N. J. MESSRS. PRICE & FREEMAN, ARCHITECTS, NEW YORK, N. Y.

"SEACROFT" is built of heavy framing with the walls lined and felted, and made to resist the stormy exigencies of a very exposed position. The site is upon a high knoll commanding the ocean and a stretch of coast from Sandy Hook to below Long Branch. The house is finished internally in butternut, the first floor is paneled, ceiled, and timbered in the same, with the rafters and beams moulded and carved.

CORRECTION.

In our last issue the name of the architect of the design for an apartment-house was printed Edward when it should have been *Edgar* C. Curtis.

Steel Bars for Bells.—In some places in Europe steel bars are used in preference to bells, supplanting them sometimes altogether in church steeples, and producing very pure, distinct and melodious sounds. An English writer even advocates their general use on the ground that while in point of sonorousness they are equal to the common bell, in certain other respects they are to be preferred to it. Their weight will be light in comparison with the ponderous objects they are to replace; they will not burthen the steeple so much, and, consequently, will give more scope for architectural design; their winding and hanging up will not be so difficult, dangerous, and expensive; they are not liable to crack, as is the case with bells, and are, therefore adapted for use in any climate; they can also be operated by a simple mechanical contrivance. They are also much cheaper than bells.

STRAIGHTENING A CHIMNEY.

We find an interesting account of straightening a chimney, 330 feet high, in the *Wochenschrift* of the Society of German Engineers, from which we take the following particulars. The chimney in question, erected in 1880-81 for the blende-roasting furnace of the Liebehoffnung zinc-works at Antonienhütte, Silesia, for carrying off sulphurous gases, soon after its completion began to curve in consequence of strong and continuous gales from the south-east. The work of straightening it was at once confided to two experienced chimney builders, Herren H. Hohmann and F. Ebeling, of Bernburg. It should be premised that the chimney was begun in July, 1880, the base, 53 feet high and 24 feet square, being finished before the setting-in of the winter, when operations had to be suspended. The work was resumed in the following spring, and actively pushed forward, so that by end of September, 1881, the chimney was completed. Its principal dimensions are:—

			Height.
Base, 24 ft. square			ft. 53
Octagonal portion			" 10
Round Shaft	Diameter at base	Exterior, 19 ft. Interior, 5 ft 6 in.	267
	Diameter at top	Exterior, 9 ft. Interior, 6 ft. 6 in.	
Total height above ground			ft. 330

The base is of ordinary Dutch brick laid in lime mortar; the round shaft, 267 feet high, of stone and lime-mortar, to which was added cement in the upper portion of the chimney, from 40 feet below the summit. The thickness of the walls of the round shaft, constructed in thirteen steps each about 20 feet high, is at the lower portion 6 feet 6 inches, at the top 1 foot 3 inches.

The completed chimney was first used in October, 1881. Soon after it began to show a strong curvature towards the northwest, beginning at the foot of the round shaft and running up towards the top in the form approaching a parabola. The curvature was ascribed, as stated, to the continuous southeast gales prevailing at the time, to which the brickwork, which was not yet sufficiently set, had to give. As the foundation of the chimney went down to the solid rock, its curvature could not be attributed to the giving way of the foundation. Subsequent measurements proved, moreover, that the square base had not moved out of the perpendicular, but had remained undisturbed. It was determined by measurements that the summit of the chimney had gradually bent over nearly 10 feet towards the northwest, so that a plumb-line suspended from the centre of the periphery of the inclined chimney-top was hanging outside the base of the chimney. The two builders named above undertook to remedy this dangerous state of matters, and began work on July 1 of this year. The chimney was first mounted by means of their special scaffolding to a height of 139 feet, where the first cutting was to be made. At this portion, the outer diameter of the chimney is 16 feet, the inner 6 feet 6 inches; the thickness of the wall was consequently 4 feet 9 inches. The weight of the portion of the chimney-shaft above this first cutting, of a height of 191 feet, is about 670 tons. Calculations and measurements with zinc-gauges had shown that a perpendicular from the calculated centre of gravity of the portion of the chimney above the cutting to a height of 191 feet upon the section plane intersected the latter about 3.29 inches, inside the periphery of the width in the clear of 6 feet 6 inches diameter, at a distance of about 5 feet from the outer edge of the brickwork.

For safety's sake, and because the mortar had not sufficiently set, owing to the chimney being taken in use directly after completion, six strong wrought-iron rings, with spring locks, were placed round the chimney above and below the cutting. The latter was begun while the roasting furnace was continued at full work, and had proceeded so far by July 21 that the projection of the centre of gravity upon the section had been undercut to the extent of $3\frac{1}{5}$ inches. On one side, however, a piece of the brickwork had remained, and could not be cut away by the saw, because the latter began already to get too much jammed in the cutting. This piece of brickwork prevented the upper part of the chimney going back, as it hindered the intended turning at the end of the cutting. The consequence was that, the other side of the chimney being undercut, the upper part turned back in a slanting direction towards the south-east by only about $6\frac{1}{4}$ inches and a crack running perpendicularly upwards began to show itself in the brickwork at the height of the centre of gravity. In this little satisfactory state the chimney was on July 21; decisive action became necessary, and it was resolved to at once blow out the furnace. The next day the chimney was mounted from the inside as far as the cutting, and the piece of brickwork left as above mentioned so successfully removed that on the same day, in the evening, the undercut part of the chimney turned back the thickness of the cutting. But as this was not sufficient, a second cutting was made at a height of 184 feet, and a third at a height of 223 feet, the whole work of straightening the chimney being completed by August 1. Although it was found impossible to make the chimney perfectly perpendicular, be-

cause the bend began lower than it was possible, with due regard to safety, to make the first cutting, the result of the operations was considered satisfactory. The stability of the chimney had been ensured, and its outward appearance almost restored to the normal.

LEGAL NOTES AND CASES.

"FEW more curious cases," says a Paris correspondent of the *St. James's Gazette*, "have ever been brought before a court of justice than that which was tried at Bordeaux the other day, the plaintiffs being the heirs of the well-known claret-grower, M. Larrieu, and the defendant a painter of some repute named Roybet. The plaintiffs asked that M. Roybet might be compelled either to pay them £400 or to paint for them a picture of equivalent value; their contention being that he had received from the late M. Larrieu a hogshead of Haut-Brion upon condition that he should do him a picture; but that he had drunk the claret and not painted the picture. They also asked that M. Roybet should be ordered to give up to them a musket and some javelins which the late M. Larrieu had lent him to sketch. M. Roybet's answer to this was that M. Larrieu had sent him the wine as a present, and that no kind of promise was ever made about his painting a picture in return for it; and that as to the pieces of arms, they were at the disposal of M. Larrieu's heirs whenever they liked to send for them. The Court took M. Roybet's view of the matter and nonsuited the plaintiffs, who have nevertheless obtained an excellent advertisement for their claret."

Customs.— "Professional Productions." — Copies of Works of Art.

An action to recover the excess of legal duties, exacted upon the importation of a number of pieces of statuary (Viti *vs.* Fulton, collector) was brought in the United States Circuit Court for the Eastern District of Pennsylvania. By the Revised Statutes, § 2504, Schedule M, "Professional productions of a statuary or sculptor" are dutiable at ten per cent *ad valorem*. On the trial it was conceded that the importations were original works, except two statues of boys which had been executed from antique models; the former therefore were without doubt liable for the low duty only. But as to the copies, it was contended that only the artist who conceived the ideal of the corporealized image is entitled to the benefit of the duty, and therefore that the statuary or sculptor who has modelled the work which he and others have finished alone is within the category of the section. Judge McKennan in deciding in favor of the importer, said:

"The statute clearly embraces all the artistic work of a statuary or sculptor who pursues the employment of his class as a profession. We cannot construe its words otherwise without wrenching them from their generally accepted signification. The statues of the boys copied from antique models were the product of the labor and skill of professional sculptors, and hence were their 'professional productions' within the purview of the law, and are subject to the low rate of duty."— *N. Y. Evening Post.*

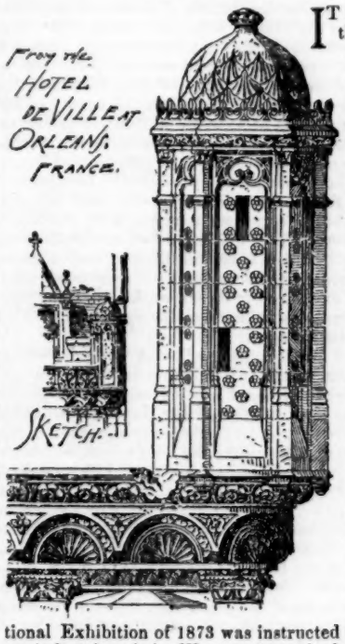
Landlord and Tenant. — Defective Roof.

The Albany *Law Journal* narrates a Minnesota decision which may be cautionary to tenants of apartments, offices and French flats. The owner of a building in Minneapolis let the various stories of it to different persons. As may be supposed, neither tenant hired the roof, and nothing was said in the brief, somewhat informal agreements made, about the duty of keeping the roof in repair. In course of time the roof grew leaky; no one repaired it; a rain-storm occurred and water percolated through the walls and floors, and drenched and ruined the stock of goods of the tenant on the ground-floor, a dealer in fire-arms and ammunition. He sued the owner of the building for damages, but the court held that the owner and general landlord is not bound even where the building is let in portions, to make repairs unless he has agreed to do so or the structure is becoming a nuisance. No doubt this is the rule when a tenant hires a whole building, but we think that in this city, the popular understanding is that tenants of an office, an "apartment," or a flat are entitled to look to the landlord to keep roof, hall, stairs, and the like in reasonable repair. Must they always stipulate for this in so many words? The Minnesota rule is surely very inconvenient, for if the landlord need not repair the roof, the several tenants must each have an implied right to do so, and after any heavy storms, ten or a dozen of dwellers under a leaky roof may gather upon it squabbling as to how it shall be repaired. If such be the law, tenants should understand it.—*N. Y. Times.*

Replevin.— Antique Cabinet.

The widow of General Meade has a suit in replevin in Philadelphia against Charles Gunold, a cabinet-maker, and the Pennsylvania Museum and School of Industrial Art, for the possession of an antique cabinet now on exhibition in Memorial Hall. It appears that the cabinet was brought to America in the early part of the present century by Richard Meade, at that time minister to Spain, and the father of the late general. It was of the kind placed beside the altar in the early days of the church to hold the sacred vessels used in communion service. The piece was elaborately carved, containing fluted columns, Ionic capitals, foliated scrolls, Cupids, carved seahorses and dolphins, besides statuettes, typical of Faith, Hope and Charity, and scriptural texts inlaid in rare woods. From the elder Meade it descended to his son, and in the course of time became considerably scratched and defaced. In 1860 Mrs. Meade sent it to a cabinet-maker named William H. Quass, whose shop was on Monroe Street, for the purpose of having it repaired. At the same time the civil war broke out, and in the worry and anxiety of the next few succeeding years the cabinet was overlooked and forgotten, and remained unnoticed in the little Monroe-Street shop. Finally, in the spring of the present year Quass died, and his executors held a public sale of his effects. The cabinet caught the experienced eye of Mr. Gunold, who purchased it, and then spent much time and labor in restoring it to its former beauty. Having succeeded in his endeavor, he deposited it in the Memorial Hall, in charge of the museum, where it has since remained. Recently it attracted the attention of the general's son, and inquiry developing the facts stated above, Mrs. Meade instituted a suit for its recovery. — *Philadelphia Record.*

DR. DRESSER IN JAPAN.



IT might have been supposed that the long succession of travellers in Japan, headed, as far as graphic power and picturesque freshness go, by Miss Bird, would have exhausted the interest excited in this magical country, and would have left little for Dr. Dresser to tell us. This, however, is not the case. Within the limits of what is most characteristic and personal in his book ("Japan: Its Architecture, Art, and Art Manufactures,") he has been preceded by no writer, and his remarks demand the closest attention from students of the history of art. Dr. Dresser went to Japan equipped with the practical experience of an architect, and entrusted with a mission which gave him unrivalled opportunities of observation. The Commissioner who represented the Japanese Government at the Vienna International Exhibition of 1873 was instructed to study most carefully the art industries of the West, and to take home to Japan a collection of European manufactured objects which were destined to be exhibited in a museum to be built at Tokio, on the model of our South Kensington Museum. Unfortunately, the ship which was bringing this collection of objects home foundered on the voyage to Japan, and therefore Sir Philip C. Owen suggested to Dr. Dresser, who was anxious to see all that was to be seen of Japanese antiquity, that he should appeal to our principal manufacturers, and arrive in Japan with a second collection as a present to the Government of the Mikado. This he did, and arrived in Yokohama with a gift in his hands which opened to him every door in the country, and which secured to him the unique distinction of a personal interview with the Mikado himself. He was treated as the guest of the nation, and among his explorations he was able to enter with the knowledge and experience of an architect to help his observations, some of the most magnificent sacred buildings in the world, to which foreigners had never before obtained access. He spent four months in the country, during which he travelled about 2,000 miles, and he brought back with him a vast number of photographs and drawings of buildings and parts of buildings. Accordingly, although every part of his book is valuable, the architectural chapters of it, and especially the illustrations they contain, are inestimable. Japanese architecture is scarcely understood at all in Europe as yet, and unfortunately, its ancient masterpieces receive at present so little respect from the Japanese Government itself with its mania for modernization of the national life, that they are rapidly falling into fatal decay.

Dr. Dresser's first expedition was made to the magnificent cluster of temples and shrines at Shiba, a suburb of Tokio. Here he had less than his usual good fortune, yet more than that of any previous visitor, for though he was unable to carry away any drawings or photographs of these superb buildings, with one exception, yet he was admitted to certain parts of the Tombs of the Shôguns which

none but great Japanese officials have entered before. The one illustration which he is able to give of the architecture at Shiba represents the water-tank in the court-yard of the great temple. This building consists of a very heavy and richly-decorated roof in the ordinary Japanese style, resting on monolith columns, on the top of which festoons in colors and gold are painted. Dr. Dresser's general impression of Shiba may be quoted; "Buildings so rich in color, so beautiful in detail, so striking in symbolism, I have never before seen or even dreamed of. Had a Gibbons been employed on the wood-carvings, had the colorist of the Alhambra done his utmost to add to forms which in themselves are almost perfect a new charm through the addition of pigments, and were the whole of such details subordinated to fitting places in a vast architectural edifice by the architect of the Parthenon, no more worthy effect could be produced than that of the buildings on which my eyes now rested. We walked through the court-yard inspecting the long rows of stone lanterns, and viewing the exteriors of the various buildings on which we find birds, flowers, water, and clouds carved with a tenderness and boldness scarcely to be surpassed, and so colored that each object retains its individual beauty, while the various parts combine to produce an effect almost perfect."

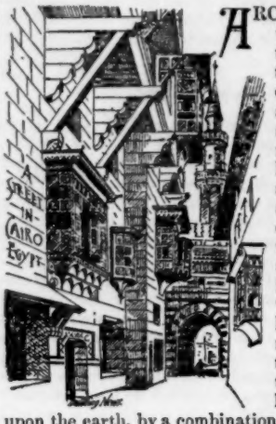
One of Dr. Dresser's most curious and interesting expeditions was to Koya-Zan, a vast mountain at the top of which, nestling in a little depression, there lies a sacred city, full of antique shrines and temples. Four hundred and forty of these holy buildings still exist in a place which formerly contained a thousand. They lie clustered together in the snow, under the shadow of enormous conifers, which meet above them like the nave of some huge cathedral. The strange confusion and obscurity of this mysterious city, into the more arcane parts of which even Dr. Dresser was not permitted to enter, its rarefied atmosphere on the edge of the frost-limit, its throng of priests, its great sanctity and antiquity, the beauty of its prospects from so narrow a point of extreme altitude, combine to make Koya-Zan one of the most fascinating places in the world.

The thirty-three temples of Kioto presented no such extraordinary difficulties to the explorer, and among the most charming illustrations of Dr. Dresser's book, and those over which we are tempted to linger longest, are the full and elaborate cuts from photographs of the Nishi-hong-wan-ji Temple at Kioto. This building is surrounded, as in all such cases, by a low wall, broken here and there by roofed gateways of the most sumptuous magnificence. The most celebrated carpenter-builder that has ever lived in Japan worked on the architecture of Kioto, and his umbrella is hoarded among the antiquities of the place as an almost sacred relic.

It was the high priest of Nishi-hong-wan-ji who was selected by the reforming Japanese Government of 1868 to proceed to London and to report on the influence of the Christian religion on public morals in England. It was the intention of the Japanese Government that if the report were favorable, Christianity should be introduced throughout the country. But after the high priest,—a most enlightened and spiritually-minded man, of very liberal views—had spent eighteen months in London, he reported to his Government that Christianity was far more powerless than either Shinto or Buddhism in preventing crime, and particularly drunkenness, and it was therefore resolved to make no change in the public religion of Japan. The result of this mission might be made the subject of much salutary reflection by those who are anxious at all costs to foist our faith and manners on the gentle races of the East. Dr. Dresser has some extremely severe remarks on the rude and uncivilized behavior of too many of the English and Americans who visit Japan for commercial reasons: and it is more instructive than agreeable to learn that though the Japanese respect our energies and our industrial enterprise they are far from enjoying our customs or desiring to imitate our religion. It is enough to make us shudder for our race to read that Dr. Dresser found in one temple the name of some British or American traveller scribbled in blue paint across the sacred forehead of Buddha.

The chief object which Dr. Dresser had in view in coming into personal relations with the high Japanese officials was to induce them to preserve intact their great artistic industries, and to persuade them that it was by a conservative spirit of taste alone that they could hope to retain the interest of the West. It is plain that such a plea is by no means out of place. The love of tawdry and ugly European manufactures has spread to a most alarming extent among this people, which so lately enjoyed a complete immunity from bad taste. Dr. Dresser's visit to the Mikado was a grievous example of this diseased love of what is European. The passages of the Emperor's temporary palace were covered with bad Brussels carpets; the wall-slides were covered with a cheap French wall-paper, and the throne was an ordinary European arm-chair. Dr. Dresser, in his reply to the Mikado's address, adroitly suggested that we in England follow the Japanese artists at a respectful distance, and that we cannot permit them to suppose that our tapestries and furniture are worthy of the notice of a race gifted with so much genius for beautiful invention. On the whole Dr. Dresser's book is consoling. If it shows us that at Yedo and Yokohama there is a tendency to affect English modes of dress and ornament, it proves to us that the charming manufactures native to Japan still proceed on the old lines in the great provincial factories, and that a spirit of antiquarianism is springing up even among the officials, and is inducing them to preserve their beautiful arts from European corruption.—*Pall Mall Gazette.*

THE USE AND ABUSE OF SCREWS IN WOOD-WORK.



ARCHIMEDES is credited with the invention of the screw, but whether the famous geometrician's labors extended much farther than the enunciation of the scientific principles and the mechanical power of the screw, it is difficult to say. If he made a screw, he certainly must have tried its effect, and was probably well satisfied with its performance, for in the whole range of mechanical appliances in the constructive arts there is not a more useful article than the screw. Archimedes is further reported to have said, "Give me a prop, a position, and a lever strong enough, and I will move the world," and, no doubt, if these conditions could be granted to him, he, as well as others after him, could lift the earth, or aught upon the earth, by a combination of the tremendous lifting and driving powers exercised by a series of screws, apart from the lever. Screws are various, and of various sizes, forms, and materials, but the same principle runs through them all, whether they be manufactured for use in metal or wood-work, or for exerting a lifting, driving, or pressing power separately. Our object here is not to treat of screw-cutting, but rather screw-driving in wood-work, and to throw out some useful hints to the building constituency, and particularly workmen. The use and abuse of screws is a matter of importance to architects, builders, and their clients, for it is according to the way screws may be applied in several building and kindred operations that good or bad workmanship will be evidenced.

Screws are more extensively used than formerly in putting together various kinds of wood framing, and even in cabinet and chair work screws are pressed into service in places where their use would not have been tolerated by manufacturers in the earlier portion of the present century. Although their existence is generally concealed in furniture and fancy work, they are often present, nevertheless, and too often they are used as a substitute for dowels, dovetails, and tenons, in the manufacture of cheap work. It is an instructive and remarkable fact that our building workmen of a century or two back, in many operations in carpentry and joinery, discarded, as far as was possible, the use of nails or screws, depending more on carefully-jointed work, put together by means of mortise, tenon, dovetail, hard-wood dowel, or oaken pin. Their work might have taken a longer time to execute than that done by our present race of joiners and wood-workers, but it was infinitely more lasting, and kept together so long as the timber or wood continued sound. The nearly universal remedy now for every broken article on the part of the jobbing joiner and cabinet-maker is to repair it with the aid of a nail or a screw. Glue is even often dispensed with, or used where it will exercise little sustaining power, and colored putty is not only made to cover the heads of sunken nails and screws on the face of a piece of work, but used also to hide bad joints and workmanship. Some years ago the writer examined an old oaken staircase and hand-rail in a college, which work was executed more than two centuries since, and in the construction of which not a nail nor a screw was used. From time to time, over long years, some slight repairs were made, but the workmen during their operations were never able to discover that a nail had been used in the original construction. There were mortises and tenons, grooves and tonguing, wooden pins or dowel-work, but no iron fastening of any kind. The writer also examined more than one old roof in which the use of iron spikes, nails, and other iron fastenings was dispensed with, and the joining of the timber was effected without their aid. In the hinging of doors and other frame-work it is necessary to use screws, but, unfortunately, many workmen if not watched or cautioned, will not do the screwing properly or in a workmanlike manner. In deal, pine, and other soft woods a brad-awl is sufficient to make an opening for the screw, which opening, of course, should be less than the thickness of the body, and short of the length of the screws used. It will be found, however, that most workmen, not content with tapping the screw a fourth of an inch or so to give it a hold before applying the screw-driver, will actually drive the screw into the wood two-thirds of its length with the hammer. This the workmen will do to save themselves trouble. If there be two hinges upon a door, and if each hinge has eight screw-holes,—four in each plate,—the chances are that the workman will drive half of the screws nearly home in the door-style and frame with his hammer rather than take the trouble of driving them gradually home with the screw-driver. Hence, if the door be a massive or heavy one, the weight of it will tend to the hinges loosening, and after a time will follow a train of other ills,—the "dragging" and "rubbing" of doors, and their makeshift cure by what is known as "easing" them. If remonstrated with for driving a screw nearly home with the hammer, the workman may probably say (as some workmen certainly think) that a few turns of the screw in the wood are sufficient. This is an erroneous and mischievous idea. A screw that is nearly driven its whole length with a hammer cannot make a regular and corresponding thread or spiral in the wood, and therefore its binding and main-

taining power in keeping the hinge in its place is all but gone. Workmen should be made to drive every screw home gradually with the screw-driver, and not only an odd one. In hard-wood operations as well as in soft woods, particularly in hinge-work, screws should be properly driven, and the aperture or opening made for the passage of the screw should be much less than the thickness of the screw to be driven. The screw will bite a sufficient passage for itself. In hard wood, however, it is necessary to give a little more freedom of entry to the screw than in soft wood, and a gimlet is needed for making the suitable opening instead of the brad-awl.

A difficulty is often experienced by persons who wish to withdraw a screw, by finding that though it will turn round under the application of the screw-driver, yet it will not unscrew out. In this case a well-grounded suspicion may be entertained that the screw in question was driven, or nearly driven, home originally by the hammer, instead of gradually by the screw-driver, and that no regular thread corresponding with the screw exists in the wood. Under such circumstances it becomes necessary often to wrench off the hinge or hinges by force, at the risk of their breaking, and this often happens. When hinges have lain undisturbed for long years on old doors or other framings, perhaps for a quarter of a century or double that time, it becomes difficult to extract the screws, although they may have been originally properly driven. This arises from the screws rusting in the wood and sometimes from other causes. Workmen themselves often fail to withdraw a screw, and are forced to break the hinge to enable them to get under the head of the screw, and wrench it out. They often split, and break too, fancy and delicate wood-work articles in their efforts to take off hinges, locks, mountings, and other finishings, despite that simple methods exist for extracting screws that have rusted in the wood. One of the most simple and readiest methods for loosening a rusted screw is to apply heat to the head of the screw. A small bar or rod of iron, flat at the end, if reddened in the fire and applied for a couple or three minutes to the head of the rusted screw will, as soon as it heats the screw, render its withdrawal as easy by the screw-driver as if it was only a recently-inserted screw. As there is a kitchen poker in every house, that instrument, if heated at its extremity, and applied for a few minutes to the head of the screw or screws, will do the required work of loosening, and an ordinary screw-driver will do the rest without causing the least damage, trouble, or vexation of spirit. In all work above the common kind, where it is necessary to use screws, and particularly in hinge-work and mountings, fancy fastenings and appliances affixed to joinery or furniture work, we would advise the oiling of screws or the dipping their points in grease before driving them. This will render them more easy to drive and also to withdraw, and it will undoubtedly retard for a longer time the action of rusting.

As matters obtain now in carpentry, joinery, furniture, and other wood workmanship, with regard to screws, although they cannot be dispensed with, yet it would be advisable in sundry classes of wood-work to minimize their use, and in other cases to do without them altogether. They can seldom be used with advantage to the displacement of mortise and tenon or good dovetail or dowel work. The growing practice of putting together wood-work with screws bespeaks a decadence of skilled labor, and of nails and screws there are far too many pressed into service in our workshops and dwellings. While admitting the usefulness of the screw in various ways, we have here endeavored briefly to show its abuse in wood-work, and at the same time to afford some hints for better methods of procedure in building and kindred workmanship. — *The Builder.*

YELLOW-PINE FOR PAVING PURPOSES.

MR. H. P. ATKINS of Brookhaven, Miss., writes as follows to the *Northwestern Lumberman.*

In a recent letter I hinted at the advantages our long-leaf yellow-pine possessed over other woods for some purposes, such as car-sills, bridge-timbers, water-tanks, etc.; I also ventured an opinion as to its superiority for street pavement. Since my letter I have seen it stated that in Galveston, Texas, where the long-leaf yellow-pine has been used for paving purposes, that it has, so far, proved to be far superior to any other wood. Some of the paving pieces that had been treated with creosote and put down seven years ago were taken up and examined, and found to be perfectly sound after seven years' hard usage, and that the blocks so examined had only worn off about one-eighth of an inch in the seven years. Does this not look like a very lasting and durable wood for hard usage?

On my tram-road, where I am using this yellow-pine for rails, on which I am running an engine of between three and four tons weight, I find the rails last unexpectedly long. I saw them out 5 by 5 inches, and 24 feet long; and for my use I do not select the best of the timber for these rails, but usually take what we term here second quality of timber. I find that these last from 12 to 18 months, where I am passing over them nearly every hour in the day, with engine, tender and from two to three log cars; so you can have some idea of what the test is on these rails. I take no precaution to level up the trackway, but put down the rails on the surface of the ground over which I desire to pass, regardless of the indentations. I bridge some places, where a deep gulch or small branch passes along across my route. If I wanted the tram-road to remain long in one particular place I would take greater pains and care in putting it down; but I am frequently changing and putting down as I cut off the timber, and I do not doubt that if I were more careful in selecting the better class of timber for rails that it would last much longer.

For fence posts yellow-pine is as lasting as any timber if it is seasoned before setting it in the ground. I know of one piece of fencing that was put up about ten years ago; the posts were well seasoned before they were set, and the party gave the ends that were to go in the ground a good coating of coal-tar, and the posts are perfectly sound to-day. How much longer they will last would be hard to determine, as they are to all appearance as sound as they were the day they were put up. For post and fencing purposes the heart alone should be used.

Another great advantage that this resinous long-leaf pine has over older woods is that in decomposition there is no poisonous or infectious exhalations from it, but, to the reverse, the vapors from it are of a disinfecting character and perfectly harmless, which I think would make it more desirable for pavements in cities that have low and moist surfaces. The great mortality attending the prevalence of yellow fever in Memphis, Tenn., in 1878 and 1879, I see has been attributed to poisoned atmosphere that emanated from the decomposition of the wooden pavement of that city. The pavement was put down from the timber of the swamp adjacent to Memphis.

HODS: THEIR CONSTRUCTION AND USE.

HODS are of two kinds. One form of hod is devised for carrying bricks, and the other for the transportation of mortar. While differing somewhat in purpose and balance, the two species of hod are yet so closely allied as to be utterly indistinguishable when apart. Indeed, it is a matter of grave interest to men that during the whirl of centuries, when every other inanimate thing has, through the indomitable perseverance of invention, been forced through a process of evolution that has robbed it of almost every semblance of its pristine nature, the hod remains to-day in structure, substance, and design exactly as the hod originally was. At present hods are cheap. Eighty-four cents will purchase one. The craze for all that is æsthetic, early English, Japanese, Etruscan, or antique has passed by the hod unchallenged. The early Irish hod still reigns supreme.

The dimensions of a mortar-hod are as follows: Length of bowl, 22⅜ inches; mean depth of bowl, 9½ inches; greatest width of bowl, 9¼ inches; height of back piece, 12⅜ inches; width of pieces forming lateral sections of bowl, 11½ inches. The dimensions of a brick-hod, it will be seen, are different. They are as follows: Length of bowl, 23½ inches; mean depth of bowl, 8 inches; greatest width of bowl, 8½ inches; height of back piece, 10¼ inches; width of pieces forming lateral sections of bowl, 8⅞ inches. It is generally conceded that the mortar-hod is built larger than the brick-hod so as to make the weight when both are loaded as nearly equal as possible.

The shank or handle is 4 feet 2½ inches for each species of hod, and the shoulder rest is always 9 inches long, 3 inches wide, and 1¼ inches thick. This shoulder rest is attached to the inverted ridge-pole of the hod, and prevents the edge from cutting into the shoulder of the proprietor.

Touching the materials used in hod building, it may be said that the earliest ideas still obtain. Iron hods have been tried, but abandoned, because they were liable to rust and become cracked when dropped six or seven stories by proprietors, who invariably and instantly relinquish all ideas and implements of labor at the stroke of 12 and of 6. The verdict of ages is that the bowl of the hod shall be of yellow-pine, and the shank a hickory pole with the bark on. In constructing a hod, it is found necessary to use thirty-three nails for the brick species, and twenty-nine nails and four screws for the kind intended for mortar. The screws are used in the latter instance to fasten the two arms of the shank to the bowl, because screws do not leave holes, as do nails when they become loosened. Small holes allow mortar to escape, and are therefore open to objections. In making the bowl of a hod, eightpenny nails are used; fourpenny nails answer best for the shoulder rest, and shingle nails for securing a narrow strip of sheet-iron that runs over the top of the back piece of the bowl for the purpose of imparting additional strength. All of the nails are machine made, with the exception of those used in fastening the shank to the bowl, which are hand made and highly

malleable. The mortar-hod, besides having four screws, is lined at the seams with white lead. It has been considered somewhat superior to the brick-hod. The weight of hods one hour after completion is ascertained to be exactly as follows: Brick-hod, 9 pounds 6 ounces; mortar-hod, 10 pounds 3 ounces. Fifteen bricks are carried in the common hod.

There is a widespread impression that the shank of a hod is steamed after being split into the V-shape necessary to accommodate the bowl. This is erroneous. The shank, after being slit for a distance of 7½ inches, is violently forced asunder by pressure against the wedge-like base of the bowl, and is secured while in that position.

Very many hods are owned privately, and many thousands more are owned by a large company up-town, which makes hods and rents them to builders along with its patent hod elevators. The introduction of hod elevators, oddly enough, met with no opposition from individual proprietors of hods, but, on the contrary, was warmly welcomed by them. The elevators do the work of many men, but as building has increased in a satisfactory ratio, there has always been enough work for men who decided to adopt the hod as a means of advancement or sustenance. Indeed, so well have the individual hod proprietors in question adapted themselves to the existing state of things, that they absolutely refuse to climb higher than the second story now, and builders must, perforce, employ the elevators for stories of a loftier pitch.

At no time in the annals of the city has the hod industry been at a higher tide of prosperity. Thus the outlook for the hod is as bright as its history has been unvarying. — *New York Sun.*

MONTHLY CHRONICLE.

December 4. Opening of the New Law Courts, London, by the Queen.

December 5. Panic in the Court-House at Brussels, Belgium, caused by a false alarm of fire.

December 6. Burning of Stanford Court, Worcestershire, England. Burning of the Royal Alhambra Theatre, London, Eng.

An unfinished building belonging to the Boston, Hoosac Tunnel & Western R. R. at Mechanicsville, N. Y., is blown down. One man killed.

December 7. Large conflagration in London. Loss $16,000,000.

Destruction by fire of the Court-House of Conecuh County at Evergreen, Ala. All the county records totally destroyed.

December 8. Inundation of Paris by the rising of the Seine.

December 9. A thief raises an alarm of fire in the Odéon Theatre, Barcelona, Spain, and causes a serious panic. One person killed, eighteen injured.

December 10. Fire destroys the jail at Delta, Miss. The prisoners are released, some making good their freedom.

December 11. Large incendiary conflagration at Kingston, Jamaica. At least twelve lives lost. Loss about $12,500,000; 400 stores destroyed.

December 12. Burning of the Enterprise Cotton Mills, Manayunk, Pa. One hundred operatives escape by the hoisting rope; sixteen persons injured.

The new stone chapel of Drury College, Springfield, Mo., is burned. Loss $45,000.

Part of the Spanish War office is burned to the ground. Twenty persons injured. The library and part of the archives are destroyed.

December 13. Fall of a bridge across Great Dry Canyon, Tex. Eight men killed.

Hotel at the Union Stock-yard, St. Louis, Mo., is burned.

December 14. Fire at Hampton Court Palace, near London. Part of the picture gallery and some paintings destroyed.

The Canada Pacific Hotel and the Johnston House at Winnipeg, Man., are burned. Loss $60,000.

December 16. The Pavilion Hotel at New Brighton, Staten Island, N. Y., is burned by an incendiary fire. It was unoccupied at the time.

The old State-house at Lansing, Mich., built in 1847 and lately occupied as a factory, is burned.

December 17. Explosion in a cartridge factory at Mt. Valerien, near Paris. Thirty women seriously injured.

Explosion of a powder-mill at Mountain View, N. J. Three men killed.

December 18. Serious explosion of the pipes of the American Steam-Heating Company at the corner of Nassau and John Streets, New York.

December 19. A fairly heavy earthquake shock is felt at Concord, Dover, Salmon Falls, and neighboring towns, N. H.

December 20. The Copeland Hotel at Pembroke, Ont., is burned, the guests escaping with difficulty. Loss $100,000.

December 21. The Sisters of Mercy Hospital, Big Rapids, Mich., is burned. All of its sixty-three patients are saved.

December 23. Panic in a church at Mt. Vernon, N. Y., caused by the burning of Christmas decorations. A few children injured.

December 28. £5,000 damages awarded the sculptor Belt in his libel suit against Lawes.

Bernard Afinger, a German sculptor of repute, dies at Berlin, aged sixty-nine.

A factory chimney at Bradford, England, falls and crushes a factory building. Thirty-six persons killed, fifty injured; mostly women and children.

December 31. Slight earthquake shock felt at Halifax, N. S.

THE $3,000-HOUSE COMPETITION.

Toronto, December 29, 1882.

To the Editors of the American Architect: —

Dear Sirs,— Will you kindly inform me whether the competition advertised in *American Architect* for a $3000-dwelling is open to Canadian architects or only to those in the United States.

Yours truly, Geo. R. Harper.

[These competitions are open to everybody. — [Eds. American Architect.]

NOTES AND CLIPPINGS.

We will remind intending competitors that the drawings submitted for the $3,000-house competition, must be received at this office on or before Saturday next, January 13.

Anecdote of W. M. Hunt. — Your stories of Hunt remind me of another, hardly less amusing, and, like yours, illustrating his sense of the dignity of his art, and his peculiarly undignified way of showing it. During the last winter of his life he one day called upon an artist to look upon a portrait which had been returned with some expression of dissatisfaction from the subject and owner, and to give his friend, the artist, the benefit of his judgment in the matter of changing and so improving the picture that it should "pass muster" as a creditable work of art, even if it did not quite suit the taste of the patron. The chief defect complained of was the complexion, which was thought to be sallow; and it was true that in the process of giving the flesh a warm glow the artist had given an impression of local yellow in the flesh-tints, so strongly marked that the complexion was yellow. When Mr. Hunt entered the studio, he looked at the portrait as it stood upon the easel, and said: "They think it is too yellow, do they? They always think it is too something except good. Your yellows are all right with your reds and the general tone of the picture, and that is well enough. Look at that bit of sky in your landscape (pointing to another picture). Isn't that good for sky to your trees and foreground? But it isn't much like that," looking up at the light which poured through the window; "and who said it was? The fact is, people don't know anything about art, and the more they know about other things, the less they know about that. But they 'know what they like,' and they don't mean to pay till they get it. They rank portrait-painters with tailors — no fit, no pay. We ought to make a stand against the unreasonable demands of the public, and let the patron share our risk. Of course we all do the best we can, and we should be paid for our work just as we pay our doctors and lawyers, whether they bring us through or not. I would have an order for a portrait mean the best thing that I can do with a reasonable effort, and that should fulfil my obligation and entitle me to be paid. Of course I like to have people satisfied when I am, but I am the one to be pleased. I know something about my work, and they don't, and when I am willing to let a picture go, that ought to stand for something, whether they are satisfied or not. But then there is another way. You know we should all paint better portraits if we didn't care a d—n for our sitters. Suppose now when a patron calls to order a portrait, I should say, 'I will not take your commission in the usual form, but I will hire you to sit and pay you one dollar an hour, and if you like the picture when I call it done, you can have it for a stated price, and if you don't like it you needn't take it; and there will be no favor either way.' With a sitter on such terms I think I could turn out something pretty good. I know I should have a good time. I'd manipulate him just as the barber does his victim, and if he dared to open his head about art or anything improving, I'd stop his yop with a paint-brush. I'd just have my way till I got through, and then he could have his — take it or leave it." — *From a Letter to the Boston Transcript.*

An Asphalt Mortar. — The *Centralblatt der Bauverwaltung* describes a patented composition made at a factory in Stargard, Pomerania, which has for some years past been used with perfect success on the Berlin-Stettin railway for wall copings, water-tables and similar purposes requiring a waterproof coating. The material is composed of coal-tar, to which are added clay, asphalt, resin, litharge and sand. It is, in short, a kind of artificial asphalt, with the distinction that it is applied cold like ordinary cement rendering. The tenacity of the material when properly laid, and its freedom from liability to damage by the weather, are proved by reference to an example in the coping of a retaining-wall which has been exposed for four years to the drainage of a slope 33 feet high. This coping is still perfectly sound and has not required any repair since it was laid down. Other works have proved equally satisfactory. In applying this mortar, as it is termed, the space to be covered is first thoroughly dried, and after being well cleaned is primed with hot roofing varnish, the basis of which is also tar. The mortar is then laid on cold, to the thickness of about three-eighths of an inch, with either wood or steel trowels, and is properly smoothed over. If the area covered is large, another coating of varnish is applied and rough sand strewn over the whole. The waterproof surface thus made is perfectly impregnable to rain or frost, and practically indestructible. The cost of the material laid is estimated at not more than 5*d.* per square foot, and it is stated that this price can be reduced by at least 1*d.* for large quantities put down by experienced workmen.

The Subterranean Quarries of Paris. — Frequent instances of subsidence of the surface soil having occurred in several quarters of Paris, the municipal authorities are bestirring themselves with a view to consolidating the sub-soil of the capital. A plan of the great subterranean quarries that extend under the Bois de Vincennes and the neighboring districts has been prepared, and the necessary work to be undertaken has been settled. The first portion, which consisted of strengthening the quarries under various public thoroughfares in the 13th, 14th, 15th, and 16th arrondissements, over a total length of 2,000 yards, is already finished. In many places it was found absolutely necessary to construct piers, and fill in the spaces between them with ballast, etc. No less than 6,280 cubic metres of masonry and 10,700 metres of earth and sand were used, while the cost of this comparatively small section amounted to about 10,000*l.* It is expected that the complete execution of the work will necessitate an expenditure of many millions of francs. — *The Architect.*

Filtering Sewage at Liege. — In Liege a company has been formed to purify sewage by filtering it through slag made in the manufacture of mild steel. It is said that the slag can afterwards be made available as manure.

BUILDING INTELLIGENCE.

(Reported for The American Architect and Building News.)

[Although a large portion of the building intelligence is provided by their regular correspondents, the editors greatly desire to receive voluntary information, especially from the smaller and outlying towns.]

BUILDING PATENTS.

[Printed specifications of any patents here mentioned, together with full detail illustrations, may be obtained of the Commissioner of Patents, at Washington, for twenty-five cents.]

269,177. LEAD TRAP OR CESSPOOL. — Alexander Chapman, Montreal, Quebec, Canada.

269,180. FIRE-ESCAPE. — Lewis Coller, Flint, Mich.

269,197–205. AUTOMATIC FIRE-EXTINGUISHER. — Frederick Grinnell, Providence, R. I.

269,219. PLASTERING COMPOUND.—Mark W. Marsden, Pittsburgh, Pa.

269,223. OUTLET FOR TANKS OF STEAM-HEATING APPARATUS. — Eugene F. Osborne, St. Paul, Minn.

269,224. STEAM-PIPING FOR BUILDINGS. — Eugene F. Osborne, St. Paul, Minn.

269,226. SYSTEM FOR EXTINGUISHING FIRE AUTOMATICALLY.—Henry S. Parmelee, New Haven, Conn., and Frederick Grinnell, Providence, R. I.

269,227. AUTOMATIC FIRE-EXTINGUISHER.—Henry S. Parmelee, New Haven, Conn.

269,234. PIPE-WRENCH. Edwin A. Robbins, Boston, Mass.

269,236. VENTILATING DEVICE. — Sumner Shaw, Boston, Mass.

269,246. PORTABLE WATER-CLOSET. — George E. Waring, Jr., Newport, R. I.

269,268. FIRE-ESCAPE. — Oscar F. Davis, Topeka, Kans.

269,272. SHINGLE-SAWING MACHINE. — Aaron Emerick, Johnsburg, Pa.

269,273. ELECTRIC FIRE-ALARM AND EXTINGUISHER. — Clarence A. Evans, Upland, Pa.

269,280. CONCRETE ARCH FOR SIDEWALKS AND OVER AREAS. — George Goodman, San Francisco, Cal.

269,292. ILLUMINATING BASEMENTS. — Peter H. Jackson, San Francisco, Cal.

269,297. METALLIC ROOFING.— Harrison E. Kozer, Waynesburgh, Pa.

269,330. MANTEL AND STOVE COMBINED.—William Schmitz, Waterbury, Conn.

269,363. VENEER MACHINE. — William H. Williams, Long Island City, N. Y.

269,372. WINDOW GUARD.—Jonathan Badger, New York, N. Y.

269,377. FIRE-ESCAPE. — Vital Bessier, New York, N. Y.

269,406. AUGER.—Porter A. Gladwin, Boston, Mass.

269,409. OIL-STONE HOLDER. — Frank H. Gowell, Boston, Mass.

269,411. SPRING-HINGE.—Henry C. Hart and James W. Cross, Detroit, Mich.

269,421. LOCKING-LATCH. — Joshua B. Hutson, Richmond, Va.

269,451. STONE-CUTTING MACHINE.—Marvin S. Otis, Rochester, N. Y.

269,482. WINDOW-SCREEN. — Isaac E. Palmer, Middletown, Conn.

269,482. WRENCH. — Loyd H. Swan, Oxford, Ind.

269,508. DOOR-HANGER. — Frank Birmingham, Hornellsville, N. Y.

269,516. KNOB-ATTACHMENT. — Jacob G. Fox, Bay City, Mich.

2 9,531. FAUCET. — James McGinley, Chicago, Ill.

269,536. PORTABLE MANTEL FOR FIREPLACES. — Charles L. Page, Chicago, Ill.

269,551. FIRE-BACK. — Nicholas B. Thweatt, Hickory Plains, Ark.

269,562. ADJUSTABLE STOP-HINGE. — Thomas H. Costello, and Arthur H. Hall, Chicago, Ill.

269,578. SPEAKING-TUBE.— Joseph Ireland, Cleveland, O.

269,591. PAINT-OIL. — John Manning, New York, N. Y.

269,593. ELECTRIC SAFETY APPARATUS FOR THEATRES AND OTHER BUILDINGS. — Charles A. Mayrhofer, Vienna, Austria-Hungary.

269,601. DRAWING-BOARD. — Annie H. Sinclair, Philadelphia, Pa.

269,648. DEVICE FOR WASHING A COMBINED URINAL AND PRIVY-COVER. — Sigmund Edinger, New York, N. Y.

269,686. LATHE. — Jacques Laurent, Philadelphia, Pa.

269,687. FAUCET. — Henry B. Leach, Boston, Mass.

269,690. BOILER AND FURNACE. — James H. McIntosh, Paterson, N. J.

269,703. CURTAIN-FIXTURE. — William H. Paulding, Peekskill, N. Y.

269,709. VISE. — Henry F. Read, Brooklyn, N. Y.

269,715. FIRE-ESCAPE. — Charles Roberts, Montgomery City, Mo.

269,719. DRAFTING-INSTRUMENT. — Henry C. Root, San Francisco, Cal.

269,728. CROSSCUT-SAW. — George F. Simonds, Fitchburg, Mass.

269,740. WINDOW-PANE. — Theophilus Tanner, Osage, Neb.

269,744. KEY-FASTENER. — Edward K. Tolman, Worcester, Mass.

269,772. MANTEL AND FRONT. — Frederick Woolfenden and Herbert L. O'Brien, Detroit, Mich.

269,775. SAFETY APPLIANCE FOR LIFTS, ELEVATORS, AND DUMB-WAITERS. — Arnont Cannon, Jr., Poughkeepsie, N. Y.

269,776. BRAKE FOR ELEVATORS OR DUMB-WAITERS. — George W. Cannon, Poughkeepsie, N. Y.

269,778. LEAD-PENCIL. — George H. Dougherty, Jersey, City, N. J.

269,784. SOLDERING-TOOL. — Maximilian F. Haber, Baltimore, Md.

269,785. MANUFACTURE OF PAPER-BOARD. — Silas H. Hamilton, Lawrence, Kan.

269,786. APPARATUS FOR MANUFACTURING BUILDING-BOARD FROM PAPER.— Silas H. Hamilton, Lawrence, Kan.

269,799. LOCK-STRIKE. — Robert Lee, Cincinnati, Ohio.

269,806. DOOR CHECK AND HOLDER. — George A. McArthur, Chicago, Ill.

269,815–817. MANUFACTURE OF PAPER-BOARD. — Silas H. Hamilton, Bushnell, Ill.

269,818. MANUFACTURE OF DOORS FROM PAPER.— Silas H. Hamilton, Bushnell, Ill.

10,264. (*Reissue.*) TRANSOM-LIFTER. — John F. Wollensak, Chicago, Ill.

SUMMARY OF THE WEEK.

Baltimore.

HOUSES. — Eight three-st'y and attic dwells., 16′ 6″ x 79′, on Preston St., between Maryland Ave. and Charles St., for Enoch Pratt; Geo. J. Zimmerman, builder; W. H. Marriott, architect.

BUILDING PERMITS. — Since our last report three permits have been granted, which are as follows: —

C. Meiner, two-st'y brick addition to No. 98 Granby St., n s, between Canal and Exeter Sts.

C. Oelrich, two-st'y brick stable, in rear of No. 155 Eden St., w s, between Bank St. and Eastern Ave.

C. Epper, one-st'y brick addition, 16′ x 32′, in rear of No. 62 Conway St., n s, between Howard and Sharp Sts.

Boston.

BUILDING PERMITS. — *Brick.* — *Lime St., No.* 14, Ward 9, for Daniel Gregory, three-st'y flat stable, 20′ x 64, S. B. Bennett, builder.

Beacon St., No. 322, rear, Ward 11, for R. D. Evans, one-st'y flat stable, 26′ 6″ x 32′ 6″; Woodbury & Leighton, builders.

Gloucester St., Nos. 48–56, Ward 11, for Vinal & Dodge and George Wheatland, Jr., 5 two-st'y mansard dwells., 22′ 3″ x 42′; Vinal & Dodge, builders.

Marlborough St., No. 191, Ward 11, for Samuel T. Ames, three-st'y mansard dwell., 24′ x 62′.

Marlborough St., No. 336, Ward 11, for Samuel T. Ames, two-st'y mansard dwell., 23′ x 42′; Samuel T. Ames, builder.

Wood. — East First St., Nos. 478–480, Ward 14, for A. M. Stetson & Co., one-st'y flat lumber-shed, 52′ x 53′; one-st'y flat storage, 15′ x 25′, and 39′x 30′; Holbrook & Harlow, builders.

Unnamed Pl., from Fremont Court, Ward 24, for Byron A. Atkinson, one-st'y mansard stable, 23′ x 26′; Freman Hopkins, builder.

Blake St., near Boston St., Ward 15, for Mrs. Annie Fryer, one-st'y pitch stable, 17′ x 20′; Alexander M. Fryer, builder.

Downer Ave., near Delloff St., Ward 24, for Mrs. E. L. Burdett, two-st'y pitch dwell., 27′ 6″ x 30′; Edw. McKechnie, builder.

Paris St., No. 115, Ward 2, for Frank W. McCausland, one-st'y pitch carriage-house, 30′ x 50′.

Newman Pl., near Dudley St., Ward 20, for Leander B. Abbott, four-st'y flat dwell., 36′ x 37′; L. B. Abbott, builder.

Brooklyn.

BUILDING PERMITS. — *Park Ave.*, s s, 215′ e of Nostrand Ave., 7 two-st'y frame tenements, gravel roofs; cost, each, about $2,500; owner and builder, Julius C. Hommel, 61 Cook St.; architect, F. F. Thomas.

South Fifth St., No. 323, n s, 80′ e Ninth Ave., four-st'y brownstone front flat, tin roof; cost, $7,000; owner and builder, George Lehrian, 231 South Fifth Ave.; architect, T. Englehardt.

Clifton Pl., s s, 260′ w Nostrand Ave.; 3 two-st'y with three-st'y rear brownstone front dwells., tin roofs; cost, each, $4,500; owner and builder, A. Miller, 373 Decatur St.; architect, T. Miller.

Nevins St., w s, between Sackett and Degraw Sts., one-st'y brick engine-house, slate roof; cost, $8,000; owners, The Fulton Municipal Gas Company, 342 Fulton St.; architect, J. F. Harrison; builder, R. Deeves.

Bushwick Ave., e s, between Vanderveer and Hull Sts., two-st'y frame hotel; cost, $6,000; owner, Joseph Boyer; architect, J. Platte; builders, C. Brown and N. McCormack.

Montieth St., No. 32, three-st'y frame double tenement, tin roof; cost, $4,000; owner, Henry Strebeng, 30 Monteith St.; builder, H. Kempf.

India St., No. 156, three-st'y frame double tenement, tin roof; cost, $3,500; owners, Clarkson, Warren & Co., 1577 Atlantic Ave.; architect; W. Wright; builder, G. W. Philips.

Dean St., s s, 200′ e Washington Ave., 2 three-st'y frame tenements, tin roofs; cost, each, $4,000; owner, Thomas Monahan, on premises; builder, I. D. Reynolds.

Oakland Ave., n e cor. Ash St., one-st'y frame storage-shed, gravel roof; cost, $4,000; owner, Church & Co., 112 Milton St.

Macon St., n s, about 250′ w Reid Ave., 6 two-st'y brick dwells., stone fronts, tin or gravel roofs; cost, each, $4,500; owner, Henry A. Foster, Lexington Ave., n w cor. One Hundred and Third St., New York; architect, J. E. Styles.

Bushwick Ave., No. 788, two-st'y frame tenement, tin roof; cost, $4,500; owner, Sarah Goodwin, on premises; architect, F. Webber; builder, B. Goodwin.

Chicago.

BUILDING PERMITS.—C. Warrington Earle, three-st'y and basement brick dwell., 25′ x 70′, 535 Washington Boulevard; cost, $14,000.

O. M. Brady, 2 two-st'y brick dwells., 47′ x 60′, Erie St. and Western Ave.; cost, $10,000.

Wm. Schwerin, one-st'y brick cottage, 24′ x 50′, 977 Twenty-first St.; cost, $1,500.

Albert Crane, 5 one-st'y cottages, 20′ x 30′ each, Dashiel St., near Twenty-ninth St.; cost, $2,000.

Howard & Crowhurst, 2 one-st'y brick cottages, 20′ x 42′, 605 and 607 Thirty-second St.: cost, $3,000.

M. J. Schwertek, three-st'y and basement brick store and flats, 25′ x 67′, 617 N. Clark St.; cost, $9,000.

A. Pelke, one-st'y brick cottage, 20′ x 50′, 251 W. Thirteenth St.; cost, $1,000.

J. V. Farwell, four-st'y and basement brick factory, 50′ x 100′, 116 to 118 Illinois St.; cost, $20,000.

F. D. Reynolds, 3 three-st'y and cellar brick dwells., 60′ x 68′, 3731 to 3765 Vincennes Ave.; cost, $10,000.

E. S. Warren, two-st'y brick dwell., 25′ x 65′, 168 Aberdeen St.; cost, $8,000.

John Anderson, two-st'y and basement brick dwell., 405 Taylor St.; cost, $4,000.

C. Shade, one-st'y brick store, 20′ x 32′, 489 Larrabee St.; cost, $700.

Sophia Wixtrom, three-st'y and cellar brick flats, 22′ x 50′, 166 Schiller St.; cost, $5,000.

F. A. Williams, two-st'y and basement brick dwell., 22′ x 40′, 133 Lincoln Ave.; cost, $5,000.

C. Stiffel, two-st'y brick dwell., 21′ x 32′, 28 Samuel St.; cost, $2,000.

Turner & Bond, 5 one-st'y brick cottages, 20′ x 30′ each, Butler St., near Twenty-ninth St.; cost, $4,000.

James Schwartgendate, two-st'y and basement brick addition to dwell., 24′ x 30′, 10 Clybourn Ave.; cost, $4,000.

Miss E. S. Merriman, three-st'y and cellar brick flats, 23′ x 72′, 143 South Hoyne Ave.; cost, $7,000.

Agnes Irons, 6 two-st'y brick dwells., 21′ x 40′ each, Laflin and Monroe Sts.; cost, $15,000.

Wm. Hennig, three-st'y and basement brick warehouse, 24′ x 56′, 115 North Ave.; cost, $3,500.

Cincinnati.

BUILDING PERMITS. — Clara L. Betts, two-st'y frame dwell., Spring Grove Ave.; cost, $2,000.

M. M. Kiesman & Son, four-st'y brick dwell., 14 Fulton Ave.; cost, $5,000.

A. E. Smith, three-st'y brick dwell., No. 87 Richmond St.; cost, $5,000.

E. Schilling, 3 four-st'y dwells., cor. of Oak and Buckeye Sts.; cost, $15,000.

Louis Fay, two-st'y brick dwell., No. 603 Elm St.; cost, $2,500.

Mary Wehman, two-st'y frame dwell., Hoffner St., near Apple St.; cost, $2,500.

Wm. Rieder, three-st'y brick dwell., McMillan St., between May and Spring Sts.; cost, $7,000.

Three permits for repairs; cost, $3,000.

Total permits to date, 660; total cost to date, $1,952,300.

Detroit.

BUILDING PERMITS. — The following permits have been granted since our last report:—

A. Beabon, frame house, Stimson Pl.; cost, $4,000.

H. Stringer, 3 frame houses, No. 199 Baker St.; cost, $4,500.

Dewey & Abell, brick dwell., No. 574 Third Ave.; cost, $3,200.

E. B. Taber, frame house, No. 985 Gratiot Ave.; cost, $3,500.

W. A. Edwards, brick dwell., No 31 Peterboro St.; cost, $4,500.

Kirckner & Co., brick addition to house, Howard St.; cost, $3,000.

A. Beaton, double frame house, Third Ave.; cost, $4,500.

M. A. Edwards, 2 brick houses, No. 33 and 85 Peterboro St.; cost, $9,000.

E. Mayhew & Son, frame house, Brainard St.; cost, $3,000.

J. D. Standash, brick store, Michigan Ave.; cost, $5,000.

A. E. French, brick dwell., No. 847 Jefferson Ave., cost, $15,000.

A. Chapoton, brick dwell., No. 561 Woodward Ave.; cost, $15,000.

A. Chapoton, double brick dwell., East Larned St.; cost, $5,000.

Hargraves Manufacturing Co., additions to factory, Eighteenth St.; cost, $3,600.

A. C. Varney, brick house, East Montcalm St.; cost, $3,700.

A. C. Varney, brick warehouse, Columbia St.; cost, $8,000.

John Boeberitz, brick house, Gratiot Ave.; cost, $5,000.

John Boeberitz, brick school-house, Chene St.; cost, $3,000.

J. B. Wilson, brick building, West Fort St.; cost, $5,000.

New York.

THEATRES. — The "Alcazar," formerly the "Metropolitan Casino," is to be again altered, this time into a theatre; Mr. Henry J. Dudley will be the architect.

Mr. McKee Rankin is to have a theatre, to seat nineteen hundred persons, built on the land recently leased by him on the cor. of Third Ave. and Thirty-first St.; it will cost over $150,000.

CARRIAGE REPOSITORIES. — Two carriage-repositories, each 50′ x 90′, five-st'y, of Philadelphia face-brick with Ohio-stone finish, are to be built from designs of Mr. Jos. M. Dunn: one for Mr. Wm. H. Gray, on Seventh Ave., between Fifty-third and Fifty-fourth Sts., to cost $32,000; and the other on Forty-seventh St., between Eighth and Ninth Aves., for Mr Jno. R. Thurber, for occupancy by Messrs. Brewster & Co., to cost $35,000.

HOUSES. — A handsome residence, 50′ x 65′, with extensions, to be built of Bedford stone, richly carved and in the French Gothic style, is to be built on Fifty-seventh St., between Fifth and Sixth Aves., for Mr. J. Rothschild, at a cost of about $250,000, from designs of Messrs. Youngs & Campbell.

BUILDING PERMITS. — *West Forty-first St., Nos.* 311 *and* 313, six-st'y brick store, tin roof; cost, $25,000; owner, Eliza J. Hays, 1327 Second Ave.; architect, T. G. Smith.

Seventh Ave., w s, 50′ 2″ n Fifty-third St., five-st'y brick carriage-repository, tin roof; cost, $32,000; owner, Wm. H Gray, 258 West Fourth St.; architect, Jos. M. Dunn; mason, John Demarest.

Eighty-sixth St., n s, 150′ e Ave. A, five-st'y brick tenement, tin roof; cost, $18,000; owner, John H. Sturk, 174 East Eighty-seventh St.; architect, John C. Burne.

Seventy-sixth St., s s, 105′ w Second Ave., 2 five-st'y brick tenements, tin roofs; cost, each, $16,500; owner, John J. McDonald, 1321 Park Ave.; architect, John Brandt.

Tenth Ave., w s, 50′ n One Hundred and Fifty-eighth St., three-st'y brick store and dwell., tin

roof; cost, $6,000; owner, Wm. Deppermann, Tenth Ave., between One Hundred and Fifty-eighth and One Hundred and Fifty-ninth Sts.; architect, Julius Boekell.

Bowery No. 123, five-st'y brick store, tin roof; cost, $23,000; owner, Paff estate; lessee, Mary Anderson, Newark, N. J.; architect, Jas. S. Wightman; builder, D. C. Weeks & Son.

West Thirteenth St., No. 20, one-st'y brick boiler-house, gravel roof; cost, $2,500; owner, Emile Beneville, 41½ East One Hundred and Sixteenth St.; architect, Paul F. Schoene.

One Hundred and Forty-ninth St., n s, 155' e of Robbins Ave., three-st'y frame dwell., tin roof; cost, $2,500; owner, Chr. Cassens, Westchester Ave., near Brook Ave.; architect, Wm. McIntyre; builder, James McAllister.

Madison Ave., n w cor. of Fifty-ninth St., nine-st'y brick flat, tin roof; cost, $200,000; owner, Thos. Kilpatrick, 60 East Fifty-eighth St.; architects, Charles W. Romeyn & Co.

Sixty-second St., s s, 200' w of Ave. A, one-st'y brick workshop, tin roof; cost, $3,000; owner, T. J. Sheridan, 226 East Eightieth St.; builders, Patrick Sheehy and owner.

Old Slip, four-st'y brick building for Police Department, tin roof; cost, $100,000; owner, City of New York.

Madison Ave., w s, 150' s of One Hundred and Seventy-fourth St., two-st'y and attic frame dwell., shingle roof; cost, $5,000; owner and builder, R. S. Guernsey, Tremont.

Baxter St., w s, 54' s of Walker St., 2 three-st'y brick dwells., tin roofs; cost, $5,000 and $6,000; owner, John Hooper; lessee, Jacob Cohen, cor. Walker and Baxter Sts.; architect, John Brandt.

West Twenty-third St., No. 525, two-st'y brick workshop, gravel roof; cost, $4,000; owner and carpenter, George Collins, on premises; mason, not selected.

Forty-seventh St., n s, 200' w of Eighth Ave., five-st'y brick factory, tin roof; cost, $35,000; owner, John R. Thurber, 146 West Twelfth St.; architect, Jos. M. Dunn: builders, L. N. Crow, and McGuire & Sloan.

Alterations.—*East Fourteenth St., No.* 44, put in elevator; cost, $6,500; owners, Wheeler & Wilson Manufacturing Co.; builders, Monk & Brauwer.

Clinton Place, No. 124, new front and internal alterations; cost, $2,000; owner, Mrs. Josephine Hyslop; lessee, H. B. Wiggin; architect, George Cook; builders, Cook & Berryman.

Sixty-fourth St., s s, 244' w of Ave. B, move building to front of lot and repairs; cost, $2,500; owner, John D. Crimmins, 40 East Sixty-eighth St.

East Twenty-third St., No. 18, is to be altered into a store, at a cost of about $10,000, from designs of Messrs. D. & J. Jardine.

Alterations.—*West Third St., No.* 1, raise attic to full story, new store-front; cost, $3,000; owner, Ed. P. Dickie, 47 West One Hundred and Twenty-sixth St.; architect, Chas. E. Hadden.

Philadelphia.

Houses.—At Thirty-fourth St. and Powelton Ave., T. J. Lewis and George Burnham, Jr., are about to build 2 three-st'y dwells., 15 rooms each, at a cost of $12,500 each.

The Year's Work.—The number of building permits issued during 1882 was 3,185, an increase over 1881 of 504 permits.

Building Permits.—*Chestnut Ave.*, s s, e of Main St., three-st'y dwell., 22' x 73'; Tourison Bros., contractors.

Venango St., 20' w of Third St., two-st'y dwell., 18' x 40'; Aug. Searle, owner.

Delaware Ave., cor. Almond St., mill and filter house, 106' x 291'; Havemeyer & Co., owners.

Gray's Ferry Road, bet. Twenty-ninth and Thirtieth Sts., one-st'y boiler-house, 69' x 76'; Henry Bower, owner.

McKean St., s s, 18' w of Eighth St., two-st'y dwell., 15' x 42'; C. Petzolb, owner.

Mildred St., s w cor. McLean St., 2 two-st'y dwells., 17' x 42'; J. C. D. Smith, contractor.

St. Louis.

Building Permits. — Twenty-three permits have been issued since our last report, of which six are for unimportant frame houses. Of the rest those worth $2,500 and over are as follows:—

Wyoming St., bet. Missouri and Illinois Aves., two-st'y brick dwell; cost, $2,700; Adam Rosner, owner; T. Knittel, builder.

Main St., bet. Loughborough and Quincy Sts., two-st'y brick dwell.; cost, $2,600; H. Haas owner; J. S. Parks, builder.

Chestnut St., bet. Garrison and Cardinal Aves., 8 three-st'y stone front dwells; cost, $5,000; D. M. Houser, owner; C. E. Ilisley, architect; J. H. Dunlap, builder.

Poplar St., bet. Twentieth and Twenty-first Sts., one-st'y brick warehouse: cost, $5,000; Union Depot Shipping and Storage Co., owners; S. W. E. Bent, builder.

St. Ange Ave., bet. Park Ave. and Hickory St., two-st'y brick dwell.; cost, $3,550; Horn, owner; J. A. Stanton, builder.

Bids and Contracts.

Indianapolis, Ind.—The City-Hall Commissioners have received bids for contracts for the erection of the new city-hall and market-house, the plans for which include a large hall capable of accommodating seven thousand persons. There were six bidders, namely: Peter Routher, $175,000; Shover & Chusham, $184,751; Youngdans & Shumaker, $178,480; J. Buchanan, $215,000; J. L. Fatout, $165,000; M. K. Fatout, $149,460. The lowest bid will be reported to the City Council for its action. A bond of $50,000 is offered that the building can be put up for the amount named in conformity with the plans and specifications.

General Notes.

Grand Rapids, Mich.—Edwin F. Uhle has commenced building a house on Fountain St.; cost, $18,000.

William Thum is building a three-st'y brick block on West Bridge St., 24' x 109'; cost, $8,000.

Mr. McLane has commenced building a block of two stores, each 20' x 80', two stories, cor. Wealthy Ave. and Division St.; cost, $3,000.

The Cornell Manufacturing Co. is building a large factory for the manufacture of wind-mills, on Berkley Ave.

The Folding Chair and Table Co. is building a four-st'y factory, corner of Zonia St. and Wealthy Ave.

J. F. Ferris is building a wooden house on Madison Ave.; cost, $3,500; Robison & Barnaby, architects.

Fred Maynard is building a cottage on Bostwick St.; cost, $3,000; Robison & Barnaby, architects.

J. W. Converse has commenced the erection of a three-st'y brick block on Front St.; cost, $8,000.

The city of Grand Rapids is soliciting plans for a fourteen-room school building, to cost from $20,000 to $25,000.

George Davidson is preparing to build a brick house; cost, $3,500; D. S. Hopkins, architect.

Mr. Nelson W. Northrop is having plans prepared for a wooden house on Union St.; cost, $2,500; D. S. Hopkins, architect.

Dowagiac, Mich.—C. W. Defendorf is having plans prepared for a house to cost $4,500; D. S. Hopkins, architect, Grand Rapids, Mich.

Flatbush, N. Y.—Robert S. Walker, 137 Broadway, is having plans prepared for a dwelling to be built at Flatbush, near Prospect Park; cost, $4,500; D. S. Hopkins, architect, Grand Rapids, Mich.

Babylon, N. Y.—Ten cottages are to be built on the Argyle Hotel grounds at a cost of from $3,500 to $4,000 each, for Austin Corbin and others, from designs of Messrs. Price & Freeman of New York.

Seabright, N. J.—A frame casino, to cost about $20,000, is to be erected from designs of Messrs. Price & Freeman, of New York.

Hartford, Conn.—A car-house, office and stables for the Hartford & Wethersfield Horse Railroad Co., is now building on Vernon St. It is of brick, measuring 144' x 154', and will cost $25,000; Mr. H. B. Philbrick is the contractor; Mr. John C. Mead is the architect.

Poquonnock, Conn.—The town-hall is now building from the plans of Mr. John C. Mead, architect, of Hartford. The building is Renaissance in style, of brick, 46' x 82'; cost, $15,000; Messrs. Cotter & Laverty, of Poquonnock, are the contractors.

Glen Cove, N. Y.—A house and stable to cost about $18,000 will be built on Long Island Sound between Glen Cove and Sands Point, for Mr. Louis Hammersley from designs of Messrs. Price & Freeman.

Larchmont, N. Y.—A $20,000 stone and tile residence is to be built for Mr. C. D. Shepard from designs of Messrs. Price & Freeman, of New York.

Hoboken, N. J.—Some important improvements are being designed by Mr. H. Edwards Ficken, of New York.

The Duke house is to be remodelled, and several stores with apartments above are to be erected.

Bellamy Mills, N. H.—W. P. Hayes & Son are building a large dry goods house, 40' x 100', for their extensive business.

Manchester, N. H.—The Amoskeag corporation are making arrangements for building a boiler-house on the west side of the river, 50' x 275'; a chimney 250 feet high, the steam to be conducted across the river, in two cast-iron pipes. It is the intention of the company to build an engine-house between mills Nos 4 and 5.

Sunapee, N. H.—The town has voted to exempt from taxes any new buildings and business, or business put into buildings now unoccupied, to the amount of $5,000 or more for ten years.

Kingsessing, West Philadelphia, Pa. — On Springfield and Chester Avenues there will be built a number of dwellings at a cost of $5,000 to $7,000 each; Thomas Robb, owner.

Media, Pa.—Wm. H. Miller is about to build a three-st'y dwelling, to be of brick and stone, to cost about $25,000.

Xenia, O.—School-house; cost, $48,000; W. R. Brown, architect, Cincinnati, O.

Lockland, O.—School-house; cost, $18,000; W. R. Brown, architect, Cincinnati, O.

Dayton, O.—Odd Fellows Hall; cost, $7,000; W. R. Brown, architect, Cincinnati, O.

Easton, Penn.—The Slate Exchange of Lehigh and Northampton Counties yesterday reduced the prices of ribbon slate 25 cents a square to wholesale dealers, but not to roofers. This is to be the scale of prices for the next six months. Prices for other slate remain unchanged.

Fall River, Mass.—It appears that there is some opposition to the re-building of the Flint mill by a number of the stockholders.

Thompsonville, Conn.—The Methodists have decided not to build a new church at once, but to solicit subscriptions, and when a sufficient sum is paid in the new building will be started.

Summit, N. J.—A frame residence with open English timber work is to be built for Mr. W. H. De Forest from designs of Messrs. Lamb & Rich, of New York.

Saugertiés, N. Y.—A handsome brick, stone and wood house, to cost about $30,000, is to be built for Mr. Wm. R. Sheffield from designs of Mr. A. H. Thorp, of New York.

Yonkers, N. Y.—Mr. F. O. Neill is to have additions made to his house, to cost $10,000, from designs of Mr. Jos. M. Dunn, of New York.

Hoboken, N. J.—A Jewish synagogue is to be built at an early date; the site has not yet been selected.

COMPETITION.

A $3,000-HOUSE.

The subject of the next competition is one which is of the widest possible interest—a cheap dwelling; and we trust that more than the usual number of designs will be submitted in competition.

PROGRAMME.

The house is intended for a clerk who has a salary of only $1,200, but whose social position is unexceptionable, and he consequently hopes to be able to build for the $3,000, which economy has placed at his command, a house in harmony with the tastes and habits formed during bachelorhood. He is now married, and has two children who must be provided for in the planning, as also the maid-of-all-work.

The material of the building, size, number, and distribution of the rooms are left to the competitors to determine, who are to be guided solely by the cost, which must approximate $3,000.

Required:—Plans of each floor, a perspective sketch, and an elevation of one of the sides not shown in the sketch, also all necessary details to a larger scale, and at least one sketch of some feature of interior arrangement.

Also, a skeleton specification of the briefest possible dimensions, enough merely to give a clue to the character and quality of the work. Also a bill of quantities giving the actual number of yards of excavation, perch of stone-work, MM of brick, laths and shingles feet of lumber, window-sashes, doors, nails, hardware fittings, special fixtures, labor, etc., giving the present market price for the locality on each item, and reckoning-in the proper amounts for waste and allowances of all kinds, including the builder's profit and the architect's commission. Those who can secure actual estimates from reliable builders are urged to do so.

The specification and bill of quantities are to be submitted on paper of the size of legal cap, and the drawings upon two sheets, each measuring 14" x 22" within the framing line.

All drawings must be received at the office of the *American Architect*, on or before Saturday, January 13, 1883.

For each of the three designs of highest merit a prize of seventy-five dollars will be paid.

PROPOSALS.

Court-House.

[At Charlotte, Mich.]

In consequence of the destruction of the plans for Eaton County Court-House, by the burning of the architect's office in Hall Block, Toledo, O., the date of the letting of the contracts is postponed to January 24, 1883.

D. W. GIBBS & CO.,
Architects.

Cattle-Sheds.

[At Waltham, Mass.]

Office of Collector of Customs,
Boston, Mass.

Sealed proposals will be received at this office **until 12 M., on the 12th day of January, 1883,** for erecting at the quarantine station at Waltham, Mass., two large, two medium and two small-sized sheds, including fencing for lots, in accordance with the drawings and specification.

Copies of the specification and any additional information may be obtained on application at this office, where the drawings can be seen.

R. WORTHINGTON,
367 Collector of Customs.

Hot-Water Heating-Apparatus.

[At Charleston, W. Va.]

Office of Supervising Architect,
Treasury Department,
Washington, D. C., December 30, 1882.

Sealed proposals will be received at this office **until 12 M., on the 23d day of January, 1883,** for furnishing and fixing in place complete, in the court-house and post-office building at Charleston, W. Va., a low-temperature hot-water heating-apparatus, in accordance with drawings and specification, copies of which and any additional information may be had on application at this office or the office of the Superintendent.

JAS. G. HILL,
368. Supervising Architect.

Wire, Spikes, Nails, Iron, etc.

[At St. Louis, Mo.]

United States Engineer Office,
404 Market St., St. Louis, Mo.,
December 15, 1882.

Sealed proposals in duplicate will be received at this office **until 12 o'clock, M., on January 15, 1883,** for furnishing and delivering at the U. S. Engineer Depot, foot of Arsenal St., in St. Louis, Mo., the following supplies for use in improving the Mississippi River below St. Louis, about

30,000 pounds best manilla bolt rope; 20,000 pounds sisal rope; 40,000 pounds annealed iron wire; 28,000 pounds spikes; 46,000 pounds round iron; 7,000 pounds sisal yarn; 2,000 pounds oakum; 3,500 pounds nails.

For blank forms for proposals and all necessary information, apply to

367 O. H. ERNST, Major of Engineers.

Timber.

[At Chicago, Ill.]

U. S. Engineer Office, 25 Honore Building,
Chicago, Ill., December 5, 1882.

Sealed proposals, in triplicate, will be received at this office **until 1 o'clock, P. M., Wednesday, January 10, 1883,** for furnishing pine and hemlock timber for breakwater construction at Chicago, Ill.

The total amount required will be about two and one-quarter million feet, B. M., to be delivered between the opening of spring navigation, or earlier, and September 1, 1883.

Parties who are not able to furnish the entire lot may submit propositions for a portion only, but for not less than two cribs.

For specifications, blanks for proposals, and all information apply to this office.

W. H. H. BENYAURD,
370 Major of Engineers.

(*Proposals continued on page* ix.)